William B. Ragan

MODERN ELEMENTARY CURRICULUM • Third Edition

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with Problems and Projects and Photo Comments by

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THIRD EDITION

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Again, to Faye, Tim, and Patty

PREFACE

The point of view of the third edition of *Modern Elementary Curriculum* is substantially the same as that of previous editions: (1) the curriculum consists of the actual experiences of children for which the school accepts responsibility; (2) the ultimate purpose of the school is the improvement of individual and group living; (3) other worthy purposes, such as learning school subjects and developing the rational powers, are means to this end; and (4) continuous study and cooperative planning are essential if the school program is to keep step with rapid changes in the culture and new insights into the nature of human growth, development, and learning.

Since the revised edition was published in 1960, however, the demands upon the schools for contributions to national security have increased sharply; a curriculum reform movement, motivated primarily by these demands, has assumed massive proportions; and instructional programs in local school systems have been modified in significant respects as a consequence of curriculum projects operating at the national level. Research and experimentation have provided new insights into intellectual development, the structure of knowledge, the act of discovery, concept formation, the self image, role analysis, and instructional leadership.

These many developments have made it desirable to publish a new edition of the text, to add a new chapter on grouping pupils for instruction, and to bring the content of all chapters up to date. The annotated lists of readings and films provided at the close of each chapter will enable the student to explore specific facets of curriculum development in greater depth than any text can provide.

Professor Celia B. Stendler, of the University of Illinois, has again prepared the Photo Comments and Problems and Projects for the book, which readers of previous editions found so valuable. The author is grateful, also, for her excellent criticisms of the entire manuscript.

Special appreciation is expressed to my colleagues Lawrence T. Rogers, Fred A. Sloan, and Ruth Elder for their help in the preparation of materials; to Perry Lanier and Eva Mae Workman for assistance with the chapter on mathematics; and to Tillman J. Ragan and Guy Johannes for assistance with illustrations. The author is indebted to the several authors and publishers who granted permission to quote from their publications.

W. B. R.

Norman, Oklahoma
March 1966

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Part I is concerned with four areas of competence that are regarded as essential for those who participate in making decisions about the elementary school curriculum: the changing role of the American elementary school, the nature of the learner and the learning process, the realities of contemporary American life, and the system of values that gives vitality and direction to our educational enterprise. In brief, Part I explores the historical, the psychological, the social, and the philosophical foundations of the modern elementary school curriculum.

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The Changing Curriculum

Each generation gives new form to the aspirations
that shape education in its time. What may be
emerging as a mark of our own generation is a
widespread renewal of concern for the quality and
intellectual aims of education—but without
abandonment of the ideal that education should
serve as a means of training well-balanced citizens
for a democracy.
—Jerome S. Bruner, *The Process of Education*
(Cambridge, Mass.: Harvard University Press,
1962), p. 1.

Generation after generation of Americans has sought its own answers to the problems of providing an education for children suited to existing needs, resources, and desires. The present generation is no exception. Perhaps never before has the task been so complex. Not only must the school provide competent teachers, adequate buildings, and modern equipment for a tidal wave of children, but it must at the same time reshape its program in the light of new conditions of living. The full effects of problems of war, overpopulation, control of nuclear weapons, civil rights, poverty in an affluent society, air and water pollution, urban blight, and automation as well as some problems as yet unidentified await those now in our elementary schools.

Fortunately, though the problems seem insurmountable, we live in a time where the role of education has never had such recognition and where adequate financial support may soon be more than a dream. The federal government is prepared to spend billions of dollars on the schools in the years ahead, and if the money is spent to achieve educational excellence then there will indeed be a golden era in education. Furthermore, teaching is attracting a growing number of the ablest young people in America, a group dedicated to the profession because they believe the schools can make a contribution to the improvement of society. The next decade promises to be one of the most exciting in educational history, and elementary education will share in that

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excitement as fresh questions are raised about purposes and new solutions are sought in curriculum practices.

In fact, in the eyes of many, the schools are already in the midst of an educational revolution. The provisions of the Education Act of 1965 made available a billion dollars in federal aid, much of it earmarked for programs for culturally disadvantaged children to compensate for environmental deficit. Mass demonstrations and marches have made Americans acutely conscious of the children who attend segregated schools and of the denial to many of a first-class education. New buildings of revolutionary design are going up in some school districts, buildings so planned as to provide for large and small group instruction, for science and foreign-language laboratories, for automated instruction and closed-circuit television. Special preschool classes in compensatory education have been introduced, and the small-class, several-adults-to-a-group pattern developed in Operation Head Start in the summer of 1965 is moving up into the primary grades. Curriculum reform in all school subjects continues to move ahead; the "new math" is perhaps the best known of the new curriculum, but reform has occurred in science, the language arts, and the social studies.

Perhaps the most pervasive change, although a subtle one, is the emphasis upon excellence. Expert opinion may differ as to how excellence is to be defined, but just as the taxpayer wants to see a return for his dollar in defense spending so he is beginning to look for demonstrated excellence for greater expenditures for education. Laymen as well as professional educators are calling for a re-examination of the purposes of the elementary school in our society and for a reshaping of its program in the light of new conditions of living.

THE MEANING OF "CURRICULUM"

Traditionally, the curriculum has meant the subjects taught in school, or the course of study. The tendency in recent decades has been to use the term in a broader sense to refer to the whole life and program of the school. The term is used in this book to include all the experiences of children for which the school accepts responsibility. It denotes the results of efforts on the part of the adults of the community, state, and nation to bring to children the finest, most wholesome influences that exist in the culture.

The function of the elementary school curriculum is determined by two basic factors. On the one hand there are millions of children in American communities—children with varying capacities for learning and with endless potentialities for good or evil in the life of the community and nation. On the other hand there are the problems of living in our society—the work that needs to be done if life is to be rich and full for every individual. The curriculum is the instrumentality through which these two factors are brought

together; it consists of experiences through which children achieve self-realization and simultaneously learn to contribute to the building of better communities and a better America.

Some of the implications of this broader concept of the curriculum follow:

1. The curriculum exists only in the experiences of children; it does not exist in textbooks, in the course of study, or in the plans and intentions of teachers. The course of study has the same relationship to the curriculum that a road map has to the actual experiences involved in taking a trip. In order to evaluate the curriculum of a school, it is necessary to observe carefully the quality of living that goes on in it.

2. The curriculum includes more than content to be learned. The selection of useful, accurate content is a very important responsibility of teachers, but content does not constitute the curriculum until it becomes a part of the experience of the child. The amount of content that becomes curriculum for one child may differ from that which becomes curriculum for another. The human relations in the classroom, the methods of teaching, and the evaluation procedures used are as much a part of the curriculum as the content to be learned.

3. The school curriculum is an enterprise in guided living. Instead of being as broad as life itself, the school curriculum represents a special environment that has been systematized, edited, and simplified for a special purpose.

4. The curriculum is a specialized learning environment deliberately arranged for directing the interests and abilities of children toward effective participation in the life of the community and the nation. It is concerned with helping children to enrich their own lives and to contribute to the improvement of society through the acquisition of useful information, skills, and attitudes.

5. The problem with which the curriculum worker is concerned is not merely that of deciding what subjects should be taught, of improving the mind, or of increasing knowledge; it is also a problem of improving individual and community living.

THE AMERICAN ELEMENTARY SCHOOL

The American elementary school has been called a unique social experiment. When it was given legal standing by the various state legislatures in this country, no previous society had deliberately established a single school system for the education of all children. It has been called the most typically American of all our social institutions, democracy's gift to children, and the cornerstone of our system of free public education.

The elementary school has come to be associated in the minds of our

people with our most cherished ideals. The dream of a social order in which every child would have the opportunity to achieve a measure of success, freedom, respect, and economic security has come closer to realization here than anywhere else principally because it has been supported by a system of free, universal, public education. Although some critics maintain that we have sacrificed quality in our effort to educate all American children, few would deny that the experiment has helped to underwrite the democratic way of life.[1]

The elementary school as it exists today represents a heritage of more than three centuries of persistent effort by men and women who have struggled against great odds to maintain a program of education designed to help make our nation both strong and free. The story of the American past cannot be fully understood merely by studying the exploits of statesmen and military men; the ideas and accomplishments of leaders in the cause of public education have been equally significant in making our nation what it is today.

The brief story of the development of the elementary school that follows can in no sense be regarded as a substitute for a thorough study of the history of American education. It is intended merely to illustrate the principle that each generation of Americans has modified the school program in terms of new sets of circumstances.

The Colonial Period: 1647–1776

The idea that the education of children should be a public rather than a private responsibility did not originate with our Puritan ancestors in New England. One of the earliest pleas for public schools was made by Martin Luther in his famous letter to the mayors and aldermen of German cities in 1524—a letter that has been called "the charter of the common schools." [2] In this remarkable document, Luther made it clear that schools were needed for the sake of Christianity, the maintenance of civil order, and the proper regulation of the household. He pointed out that this matter could neither be left to parents nor to nobles and lords, and he called upon the city officials to take this matter into their own hands or "be obliged to feel in vain the pangs of remorse forever." The student who takes the time to examine Martin Luther's ideas about the education of children may be surprised to find that more than four centuries ago he was thinking about what we now call citizenship education, moral and spiritual values, family life education, distributive education, the activity program, professional education of teachers, and child study.

The Puritans in New England recognized the necessity for schools to support their religious beliefs. They believed that the Bible was the guide

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[1] See Henry Steele Commager, *Our Schools Have Kept Us Free* (Washington, D.C.: National Education Association, 1962).

[2] J. D. Russell and C. H. Judd, *The American Educational System* (Boston: Houghton Mifflin Company, 1940), pp. 19–21.

to salvation, that each person should be able to read the Bible, and that this required that schools be established. It cannot be said that they intended to establish a great system of state schools to support a democratic society. It has been said that there was much missionary zeal in this period, but that it was more a zeal for the church than for humanity.[3]

The language used in the preamble of the "Old Deluder Satan" Act, passed by the Colonial Court of the Massachusetts Bay Colony in 1647 indicated the religious motive for education in the New England colonies. "One chief project of the Old Deluder Satan, to keep men from a knowledge of the Scriptures" was listed as the primary reason for requiring towns to establish common schools and grammar schools. This act was not only the first piece of legislation in America requiring that schools be established, it was the first example in the history of the world of a law requiring that children be provided with schooling at the expense of the community. This was truly a revolutionary idea, and one that foreshadowed the development on this continent of a unique plan of public education. The date, therefore, provides a convenient starting point for a discussion of more than three centuries of curriculum development in this country. It should be remembered, however, that schools existed in Massachusetts before this law was passed and that more than two hundred years elapsed before a system of free, universal, public education was established in the United States as a whole.

The details of erecting buildings, levying school taxes, and hiring teachers were left to the people of the various towns. Legislation passed in 1693 gave selectmen authority to levy school taxes with the consent of a majority of the people of a town, and later legislation provided that common-school teachers should be examined and certified by the selectmen. As the people moved from the compact communities to more remote areas, it became necessary to organize district schools rather than town schools. Thus, Massachusetts and other New England colonies provided precedents for taxation for school purposes, certification of teachers, the district school, and the local board of education.

Various types of schools existed in the colonies—charity schools, dame schools, apprenticeship schools, and parochial schools. The curriculum consisted of reading, writing, spelling, arithmetic, the catechism, prayers, and the singing of hymns. Pupils were taught individually by the memorizing method, and the schools were expected merely to add a veneer of literacy to the education the child received at home and at church.

The famous *New England Primer*, which was the most-used book in colonial schools and which continued to be used for more than a hundred years, gave additional evidence of the religious motive for education. It has been estimated that more than 3 million copies of this book were sold. It

[3] See William E. Drake, *The American School in Transition* (Englewood Cliffs, N. J.: Prentice-Hall, Inc., 1955), p. 64.

contained an illustrated alphabetical rhyme, beginning with "In Adam's fall we sinned all," and ending with "Zacheas he did climb a tree his Lord to see." It also contained a list of the books in the Old and the New Testaments, the Lord's Prayer, the Apostles' Creed, the Ten Commandments, and the Shorter Catechism. Reisner suggested that it was not only a religious book, but that it was religious in "the strict and narrow sense of Calvinistic orthodoxy." [4]

The discipline in colonial schools was in harmony with the theological belief of time—that children were conceived in iniquity and born in sin. It was believed that they could be regenerated only by the severest type of discipline. The expression, "beat the devil out of them," which is sometimes heard today, was taken literally in colonial schools. The whipping post and the dunce-stool were familiar objects in classrooms, and continual flogging, wailing, and fear made the school resemble a prison more than a place for busy, happy children. These practices reflected the harshness and brutality of a time when young people were sometimes put to death for disobedience of parents.

In Virginia and the Southern colonies generally, where the class distinctions of the old country were reproduced, the apprenticeship system prevailed. The upper classes employed tutors or sent their children to England to be educated. But these people believed that it was the business of the poor to work rather than to think. "To make society happy," they said, "it is requisite that great numbers should be ignorant as well as poor." Governor Berkeley of Virginia wrote, in 1671, "I thank God there are no free schools or printing presses, and I hope we shall not have them these hundred years." His hope was more than realized, for Virginia did not develop a system of free schools until the middle of the nineteenth century.

The Massachusetts type of school was adopted in all the New England colonies except Rhode Island, where the devotion to religious freedom was too strong to permit the establishment of schools dominated by one religious sect. Outside New England, colonial legislatures showed little interest in education, and schools developed more or less at random through church and private effort. The law of 1647 was followed by a period of decline in education in Massachusetts and in other New England colonies. School districts were not able to maintain as good schools as towns had provided before they were divided into districts. When the Revolution began, New England had poorer schools than those that had existed a century earlier.

This brief account of developments in elementary education during colonial times illustrates the idea that schools tend to reflect the conditions and beliefs of the social group that supports them. It also reveals that only small beginnings were made toward the development of a truly American elementary school.

[4] Edward H. Reisner, *The Evolution of the Common School* (New York: The Macmillan Company, 1930), p. 40.

The National Period: 1776–1876

A new motive for education began to emerge during the Revolutionary and early national periods. Many of the leaders during these periods saw clearly that free public schools were necessary to support a popular government. Madison wrote, "A popular government without popular information, or the means of acquiring it, is but a prologue to a farce or a tragedy or perhaps both." Jefferson expressed the belief of many of the leaders when he said, "If a nation expects to be ignorant and free in a state of civilization, it expects what never was and never will be."

Other prominent men of the time were calling attention to backwardness of American education and were formulating plans for a system of education that would be free, state-controlled, nonsectarian, tax-supported, and open to all children and youth. The liberal views of these forward-looking men were illustrated by the statement of Robert Coram, "Education should not be left to the caprice or neglect of parents, to chance, or confined to the children of wealthy parents. If education is necessary for one man, my religion tells me that it is equally necessary for another." The emphasis on liberty, equality, and the rights of the individual found in great documents such as the Declaration of Independence, the Bill of Rights, and the Northwest Ordinances, stimulated many to see the need for a system of education in harmony with these ideals.

The ideas of these liberal leaders, however, were not shared by the governing authorities of the time. The Constitution of the United States made no mention of education. Few of the liberal leaders of the period were present at the convention; Jefferson was in Paris, Samuel Adams was not chosen, and Patrick Henry refused to attend. The framers of the Constitution wanted a stable government, one that would be capable of protecting property, and one that would not be too responsive to the wishes of the masses. Washington certainly had no illusions about the capacity of people generally to participate in determining policies. He wrote, "Mankind, when left to themselves, are unfit for their own government." Alexander Hamilton's views on the subject are well known; he said, "Your people sir—your people is a great beast." Gouverneur Morris stated the same view: "Give the votes to the people who have no property and they will sell them to the rich." John Adams described democracy as "the most ignoble, detestable and unjust form of government," and added, "There never was a democracy that did not commit suicide."

THE PUBLIC SCHOOL REVIVAL   There was only one institution in the United States for the preparation of teachers in 1826, and no professional book on teaching had yet been printed in the United States. Private schools and church schools provided the only facilities for the education of children in many states. The practice of granting public funds to private schools was common, and some states passed laws to permit certain localities to establish

"pauper" schools for children of poor parents. The idea of establishing public schools in the various states met strong opposition from private schools, from religious sects, and from those who believed that it was unjust to tax people who had no children to support schools.

Yet, by 1876, the principle of free public schools had been accepted in all the states, state systems of education had been established everywhere except in some Southern states, public normal schools had been generally established, and the system had been extended to include four years of high school. Why was so much accomplished in a period of fifty years? To answer this question, it is necessary to examine the movement called "the public school revival," and the forces that contributed to its success. The public school revival is a collective term used to describe a series of events and movements that resulted in the establishment and improvement of public schools. It involved changing long-established attitudes of those who influenced school legislation, persuading voters to cast their ballots for increased school appropriations, getting schools established where none had existed, establishing state departments of education, making provision for teacher education, and enriching the curriculum. It represented a tremendous awakening of the American conscience in respect to the education of children, and its contribution to the strength of the nation in the years that have followed can scarcely be overestimated. An examination of some of the significant developments that contributed to the success of the movement is, therefore, a must for those who would understand the changing curriculum of the American elementary school.

THE INFLUENCE OF THE FRONTIER   Thomas Jefferson drafted a plan in 1779 for a complete system of public education for Virginia. The only part of his plan that he lived to see established was the University of Virginia. It was not until the influence of the frontier began to bring about significant changes in American life that state legislatures began to enact legislation providing for public schools. By 1803 four new states had been admitted from the territory west of the Appalachians; by 1810 this region had a population of 1 million. It was here that the characteristics commonly regarded as typically American were developed; it was here that the ideas and traditions of the older settlements were abandoned; and it was here that new ideas, customs, and institutions emerged. "For the frontier," says Agar, "democracy was not an ideal; it was an inescapable condition, like the weather." [5] The property qualification for voting and holding office was omitted from the constitutions of all the states west of the Appalachians except Mississippi; there was an increase in the number of offices to be filled by popular vote; and representation in state legislatures was changed from the basis of wealth to the basis of population. Other reforms that indicated increasing confidence in the people followed,

[5] Herbert Agar, *The People's Choice* (Boston: Houghton Mifflin Company, 1933), p. 109.

and eventually the older states followed suit, although some of them delayed until the middle of the nineteenth century. As the right to vote was extended to all white male citizens, agitation for free public schools increased; citizens who were to have a part in determining the policies of the government must be qualified to vote intelligently.

THE INFLUENCE OF PESTALOZZI   During the period of the public school revival, educational reforms in this country were greatly influenced by European examples. The influence of the reformer Johann Heinrich Pestalozzi (1746–1827), was particularly important. In fact, Knight has said, "Pestalozzi, probably more than any other educational reformer, laid the basis for the modern elementary school and helped to reform elementary-school practice." [6] The first pedagogical book published in the United States, Samuel R. Hall's *Lectures on School Keeping* (1829), reflected the influence of Pestalozzi; the first state normal school, established at Lexington, Massachusetts, in 1836 bore clearly his stamp; and the educational philosophy of Horace Mann, Henry Bernard, and other leaders of the public school revival was basically that of Pestalozzi. Reisner says, "Clearly the most influential source of educational ideas during the 'Common School Revival' were the examples and theories of Pestalozzi and the systems of public education in Prussia and other German states." [7]

Pestalozzi's concept of child growth and development was an organismic rather than a mechanistic one; he recognized that the narrow, mechanical exercises in reading that were used in his time were inadequate to prepare children for intelligent citizenship; and he taught that the chief function of the teacher was to provide a good learning environment and to lead pupils into vital experiences. He set forth his educational ideas in a book called *How Gertrude Teaches Her Children*, and experimented with a teacher education program at Burgdorf, Switzerland.

THE INFLUENCE OF THE PRUSSIAN EXAMPLE   After their defeat by Napoleon in 1806, the Prussians were determined to establish a national system of education as a means of building a stronger nation. Young men were sent to observe the work of Pestalozzi in Switzerland and returned to Prussia to work out instructional procedures in harmony with those they had seen him using. When Calvin E. Stowe, Horace Mann, and other leaders of the public school revival visited Prussia they found the Prussian-Pestalozzian system in operation and returned to the United States to publish reports containing elaborate descriptions of the system. Edward A. Sheldon established a normal school in Oswego, New York, which became famous for the use of Pestalozzian procedures.

It seems ironical that suggestions for so many features of the public

[6] Edgar W. Knight, *Education in the United States* (third rev. ed.; Boston: Ginn & Company, 1951), p. 512.
[7] Reisner, p. 349.

schools developed in this country came from a state whose political institutions were so different from those of the United States. However, the American leaders had no place to go except Prussia to study the features of an effective program of public education. Features that they studied and later imitated in this country included an effective state agency for education, special institutions for the education of teachers, grading pupils on the basis of ability, effective methods of instruction, and more intelligent methods of discipline than had prevailed previously. How these features were gradually modified so that we developed a distinctively American system provides much of the content of the history of American education.

INFLUENCES FROM GREAT BRITAIN   Three educational movements, originating in Great Britain, influenced developments in the United States during the national period. In 1815 Robert Owen established an infant school in Scotland for children who were working in factories. This school taught cleanliness, plays and games, and the art of working together. Samuel Writherspin organized the Infant School Society in England in 1824, and reading, writing, arithmetic, geography, and natural history were added to the curriculum. Infant schools were established in Boston in 1818, in New York and Philadelphia in 1827, and in Providence, Rhode Island, in 1828. The infant school, which at first was distinct from the elementary school, became the primary department of the elementary school when both were taken over by public school authorities.

Robert Raikes organized the first Sunday School in England in 1780 for the purpose of providing instruction in reading and the catechism to children who were working in factories. Sunday schools were introduced in this country about 1790, and existed as secular institutions for nearly a half century. After the churches took them over, the secular instruction was dropped. They made a contribution to the success of the public school revival by getting people accustomed to the idea of secular instruction for children.

The monitorial system, which also originated in England, played an important role in getting public schools established in the United States. Andrew Bell used the monitorial system in an orphan asylum in India, and later Joseph Lancaster used a similar plan with industrial classes in England. A Lancasterian school was opened in New York City in 1806, and soon Philadelphia, Pittsburgh, Baltimore, Washington, and Louisville had schools operating on the Lancasterian plan. Lancaster himself came to the United States in 1818 to help promote the movement.

Lancaster published manuals giving minute directions for the conduct of recitations and for classroom management. By using pupils as monitors and by reducing classroom routine to military precision, it was possible for one teacher to direct the instruction for several hundred pupils. The plan was received with great enthusiasm by proponents of public education in the United States. Governor Clinton said, in 1809, "when I perceive one great

assembly of a thousand children under the eye of a single teacher, marching with unexampled rapidity and with perfect discipline to a goal of knowledge, I confess that I recognize in Lancaster the benefactor of the human race." In order to get any system of public education established at that time, it was essential that the expense be very small. As late as 1834, Philadelphia had an average of 218 pupils per teacher, and the annual per pupil cost was only five dollars. The monitorial system was mechanical, it gave little attention to individual differences in pupils, and it consisted primarily of using those who knew little to teach those who knew less. By the middle of the nineteenth century the people were looking for something better, and enthusiasm for the monitorial system began to wane. It had, therefore, served a useful purpose by getting people accustomed to having tax-supported schools for their children to attend.

EDUCATIONAL LEADERSHIP The success of the public school revival depended to a large extent upon the work of intelligent, persistent educational leaders. Some say that it was merely the lengthened shadow of Horace Mann. Although he was its most outstanding leader, other men prepared the way for him and significant developments in America and elsewhere contributed to the success of the movement to which he gave intelligent, effective, and courageous leadership.

James G. Carter was instrumental in getting the legislature to establish the first state board of education in Massachusetts in 1837, and Horace Mann became its first secretary. Mann had been an attorney, had worked for social reforms, and, as president of the senate, had signed the act creating the position that he later accepted. He said, "I have abandoned jurisprudence and betaken myself to the larger sphere of mind and morals." He served twelve years in this position, collecting and publishing information about the condition of the schools, traveling up and down the state addressing conventions and other public meetings, and visiting Prussia and other European states to study school systems. His annual reports were models of readability, directness, and simplicity. While he occupied this position, three normal schools were established, a full month was added to the average school term, there was a gradual substitution of public high schools for private academies, appropriations for schools were doubled, school libraries were developed, and methods of instruction based on the ideas of Pestalozzi were adopted. During these twelve years the attitude of the people of Massachusetts toward public schools changed from one of apathy to one of active enthusiasm.

Leadership in the cause of free, public education was not limited to any one profession or group. Literary men, statesmen, and representatives of industry and labor helped to build a climate favorable to public education. One of these was Samuel Gompers, an intelligent leader in the labor movement for more than sixty years. He insisted that every individual, regardless of the circumstances into which he was born, was entitled to the greatest possible

opportunity for self-achievement and that an education which developed the creative abilities of the individual brought into the life of the nation a force that made for a larger measure of freedom. He expressed the central American belief in the worth of the individual as follows: "You cannot weigh a human soul on the same scales with a piece of pork."

Thus, these many forces, together with other favorable developments, combined to make the public school revival a success. The first breakthrough came in Pennsylvania when Thaddeus Stevens won the historic battle in the legislature in 1835. His address to the members of the legislature in favor of public, tax-supported schools for every child was perhaps the most effective presentation of the cause that had been made up to that time. By 1876, the principle of public elementary education had been accepted in all the states, and schools had been established everywhere except in the states of the Deep South, where economic conditions following the Civil War left the states too poor to support schools. It remained for future generations of Americans to expand and improve the schools.

The Period of Expansion and Reform: 1876–1929

The period from 1876 to 1929 witnessed the expansion of the United States in business and industry, in territory, and in influence on world affairs. The history of these fifty-three years is the story of the efforts of a free people to adjust government machinery to rapidly changing economic and social circumstances. The growth of cities, of factories, and of monopolies produced a complex, industrialized economy in place of the simple, agricultural one of former years. Social and economic forces and the energy and initiative of individuals were building a powerful nation, but progress was not always measured in terms of human welfare. The exploitation of human and natural resources, the slums and sweatshops, child labor, and the unwholesome influence of money in politics brought with them the demand for reform. The continuing struggle to meet these problems accounts for a large portion of the historical subject matter of this period.

An examination of the political history of the expansion and reform period reveals a continuous emphasis on reform. Grover Cleveland fought continually for tariff reform. Theodore Roosevelt was energetic in his efforts to reduce the power of "big business" over government. Woodrow Wilson was keenly concerned with the progress of these reforms and with extending what he called "the new freedom." These reforms represented not merely the desires of official leaders; to no small degree they expressed the spirit of the times.

EXPANSION AND REFORM IN ELEMENTARY EDUCATION   The period from 1876 to 1929 was one of expansion and reform for the public elementary school. Quantitatively, the elementary school of 1929 had little resemblance to that of 1876. The enrollment had more than doubled, many new subjects

had been added to the curriculum, the length of the school term had increased by more than 30 percent, and per-pupil expenditures had enormously increased.

Teacher education, always a major influence in determining the quality of the curriculum, expanded rapidly during this period. The first private normal school was established at Concord, Vermont, in 1823; the first state normal school at Lexington, Massachusetts, in 1839; and by 1861 normal schools existed in all except the newer states. The first permanent, exclusively professional chair in education was established at the University of Michigan in 1879. The amount of professional training possessed by most teachers at the close of the nineteenth century, however, was pitifully small. As late as 1914 it was possible to obtain a teaching certificate by passing an examination on the common branches and answering a few simple questions dealing with a subject called "pedagogy." Not even a high school education was required.

By 1929 many normal schools had become four-year teachers' colleges, and schools of education had been established in virtually all universities. The curriculum in teacher education had been expanded to include educational psychology, child psychology, educational measurement, special methods, history and philosophy of education, curriculum development, and practice teaching.

At the beginning of this period, pupil progress was evaluated by means of oral quizzes, written examinations prepared by teachers, ciphering matches, and spelling bees. By the end of the period, schools were using standardized achievement tests in the school subjects, individual and group intelligence tests, adjustment inventories, and aptitude tests. Supervisors of instruction and directors of research had been added to the school staff to make the teaching of the several subjects more uniform and more efficient.

Much progress was made during this period in providing for individual differences among pupils—differences revealed by the use of objective tests developed by psychologists and measurement experts. The curriculum was, in the main, still regarded as a number of subjects to be mastered, but efforts were being made to allow the slow child, the average child, and the bright child to master the subjects at different rates of speed.

FACTORS OPERATING TO ENTRENCH THE FORMAL, REGIMENTED TYPE OF PROGRAM   During the period of expansion and reform, several factors operated to entrench the formal, regimented, undemocratic program of elementary education that had been imported from Europe during the mid-nineteenth century. One factor was the rapid growth of high schools, which by various means managed to impress upon the elementary schools the necessity for pupils to master a standardized list of facts and skills as preparation for entrance to high school. A second factor was the mechanistic, stimulus-response psychology that emphasized repetition as the means of learning and the reproduction of the material learned as the proof of learning. A third factor

was the influence of the factory ideal on school practice. In the report of their survey of Middletown, the Lynds state that the typical school of 1925 was "like the factory—a thoroughly regimented affair." [8]

REFORM MOVEMENTS IN EDUCATION   The theme of reform, which provided much of content for political discussions of the time, was also prominent in the field of education. The limitations of the typical school of this era were recognized by educational leaders in Europe and America, and many of the features that are now firmly established in educational theory and practice can be traced to the ideas of men and women who were ahead of their times. Space is not available here for a detailed exposition of the views of educational reformers of this period, but the influence of a few on education in this country was so profound that they need to be mentioned.

Johann Friedrich Herbart, a German psychologist and educator lived from 1776 to 1841, his most productive years covered the first third of the nineteenth century, but fifty years were to elapse after his death before the impact of his ideas on education in this country was to become pronounced. After his death, his educational views were carried on at the University of Jena by many of his followers, among whom was Wilhelm Rein, Professor of Pedagogics. Charles de Garmo, Charles A. McMurry, and his brother Frank M. McMurry were among the Americans who studied with Rein in the 1880s, before graduate instruction had been provided in American universities to any great extent. These young men became crusaders for Herbartian ideas and practices in the United States. The Herbart Club was formed in 1892; it became the National Herbart Society for the Scientific Study of Education in 1895 and the National Society for the Study of Education in 1902. The National Herbart Society published a yearbook and a supplement each year between 1895 and 1899; the NSSE has published two yearbooks a year since 1902.

Herbart taught that the chief purpose of education was to develop personal character and to prepare for social usefulness, that instruction should be adapted to the past experiences and present interests of pupils, that school subjects should be correlated, and that it was the function of the teacher to provide new and real experiences for pupils.

Herbart's influence was exerted against assignments from a single textbook to be memorized and recited; he provided examples of a more enlightened form of instruction, which depended more on the interests of children, which emphasized meaning rather than memorization, and which was directed toward the development of intelligent behavior. Herbart's pedagogy, in spite of the new direction that it gave to teaching, was based on an inadequate psychology. A more modern theory of instruction could not be developed until psychologists provided more insight into the nature of the learning process.

[8] Robert S. and Helen M. Lynd, *Middletown* (New York: Harcourt, Brace & World, Inc., 1929), p. 188.

The "five formal steps" of the recitation—preparation, presentation, comparison and abstraction, generalization or definition, and application—were, of course, capable of being carried to extreme. Practices grew up in normal schools, under Herbartian influence, which were formal and artificial to a degree that was completely contrary to the Herbartian spirit. Student teachers were required to prepare plans in terms of the five formal steps, showing where each step began and ended and what was to be done within each step. The fact remains, however, that the Herbartian movement directed attention to a method of instruction that was centered on the acquisition of meanings, raised questions about the traditional practice of teaching each subject without reference to other subjects, introduced the idea of correlation of subjects, and advanced the idea of making applications of psychology to instructional practices. Moreover, the current emphasis on "unit teaching" can easily be traced to the Herbartian influence of the 1890s. Educational reforms, like inventions, stand on each other's shoulders.

Friedrich Wilhelm August Froebel (1782–1852) had a very important influence on education in America. The idea of self-realization through social participation and the principle of learning to do by doing can be traced to Froebel. His emphasis on the social aspects of education provided a precedent for Francis W. Parker, who conducted the Cook County Normal School to prepare teachers "in the methods of democracy . . . that which will set the souls of children free." His most concrete contribution to American schools was the kindergarten, which was developed more widely here than in any European country. The first kindergarten connected with a public school system in this country was established at St. Louis, Missouri, in 1873, by Superintendent William T. Harris. Modern psychologists have generally rejected the mystic symbolism of Froebel's theories, and kindergarten practices have been modified in more recent years.

Maria Montessori (1870–1952) was a remarkable Italian physician who became interested in the education of young children, and who founded the world-famous *Case dei Bambini*. These were preschools in the slum quarters of Rome and Milan run on revolutionary principles. Basic to her concept of education was the notion that the child should have freedom to proceed at his own pace in learning, choosing and directing his own activities within the limits of a prepared environment. The equipment in this prepared environment consisted of highly imaginative teaching materials designed for specific purposes. Some emphasized sensory training. Materials were prepared, for example, to teach children to recognize various Euclidean shapes—square, rectangle, polygon, and so on—by inserting each into the appropriately shaped hole in a large frame, or by tracing them. Children traced sandpaper letters with their fingertips before attempting to reproduce the letters. Some equipment was designed to provide exercises in practical living. There were button charts, which the child could use in practicing buttoning and unbuttoning,

equipment for learning how to tie shoelaces, pour from a pitcher, and carry out other tasks. The teacher gave a child individual instruction in each task, for Montessori deemed it important that the child learn the right way of carrying out the task; errors are learned through cluttered experiences. Didactic materials for teaching language and arithmetic were also available to the child. Through tactile and muscular sensations the child learned to differentiate first the vowels and next the consonants. The next step consisted of combining letters to form simple words, and finally to put words together to form sentences that could then be read back.

Running through all of Montessori's writings is the theme that the pre-school child is ready to learn, and that he can and does teach himself many things, if given the opportunity. Moreover, he has a zest for learning; every reader of Montessori comes away from her books impressed with the spontaneous interest of the child in tackling what might seem very routine tasks, and spending long periods of time with them. Today's psychologist refers to such spontaneous interest as "intrinsic motivation." No adult keeps the child at a given task; having his intellectual curiosity satisfied as he finds out how things work may be the motivating force at work here.

Today Montessori's theories are having a revival, and schools patterned after those that she founded are increasing rapidly in the United States. Some enthusiastic followers tend to be doctrinaire; they abide strictly by the letter of the law laid down in the doctoressa's books, and would have the curriculum follow along the exact same lines as that of the *Case dei Bambini*. Others would argue for an updating of materials and activities; the exercises in practical living suited to slum children in Rome at the turn of the century would hardly seem appropriate for the middle-class children who make up the greatest part of the population in Montessori schools (though the exercises might be more easily adjusted for disadvantaged children). But the contribution of self-chosen and self-directed activities to intrinsic motivation, the use of self-correcting equipment, and the need to match activities to deficiencies in background are the rewarding ideas from Montessori that can be put to good use today.

John Dewey (1859–1952) has exerted a wide influence on educational theory and practice through his writing, through his teaching, and through the experimental school that he established at the University of Chicago in 1896. The school was important not only because it was the first experimental laboratory school in America, but also because it provided an opportunity to demonstrate a new type of teaching.

In 1897 Dewey published a compact statement called *My Pedagogical Creed*. The statement, which seems almost inspired in its simplicity, has been called the emancipation proclamation of childhood. It expresses the philosophy that children should live and learn happily and well according to their needs and interests today as the best possible preparation for worthy living

tomorrow. Joy Elmer Morgan, who for many years was editor of the journal of the National Education Association, said that this statement was as important for the revolution that was taking place in education as Thomas Paine's *Common Sense* was for the political revolution of 1776.

Dewey explored five significant issues in the field of educational theory: what education is, what the school is, the subject matter of education, the nature of method, and the relationship of the school to social progress. These issues, of course, existed before Dewey's time; they are at the center of the controversies about education that are raging today, and they will continue to be live issues as long as men cherish the ideal of a free society nourished by a dynamic program of public education.

Dewey regarded education as a social process—a process of bringing the child to share in the inherited resources of the race, and to use his powers for social ends. He believed that education must begin with psychological insight into the child's capacities, interests, and habits, but he did not neglect the social side of the process. He said, "This educational process has two sides— one psychological and the other sociological—and neither can be neglected or subordinated to the other without evil results following."

He regarded the school as a form of community life. He said, "The school must represent present life, life as real and vital to the child as that which he carries on in the home, in the neighborhood, or on the playground." He believed that the school should take up and continue the activities with which the child was already familiar in the home, and that the influence of the school should flow into the life of the community. Dewey said, "Save as the efforts of the educator connect with some activity which the child is carrying on of his own initiative independent of the educator, education becomes reduced to pressure from without. It may, indeed, give certain external results, but it cannot truly be called educative."

Dewey believed that the subjects taught in school were frequently too far removed from the day-to-day experiences of children. He became so strongly convinced of this that he established an experimental school in which none of the conventional school subjects was taught. He and his followers, Meriam and Collings (see Chapter 6), conducted elementary schools in which "normal child activities" (that is, artistic activities, construction activities, story activities, excursion activities, and play activities) replaced conventional school subjects. In connection with a project on Holland, for example, the children learned a great deal about the geography and history of that country because they were interested in finding out these things. They went to books and other resources to find answers to problems. They employed a wide range of artistic activities and had occasion to discover and make applications of certain laws of science. In fact, there was hardly an area of human interest that was not stimulated in connection with the study.

"The result, to my mind," he said, "justifies completely the conviction

that children in a year of such work . . . . get infinitely more acquaintance with the facts of science, geography, and anthropology than they get when information is the professed end and object, when they are simply set to learning facts in fixed lessons." Dewey regarded subject matter as anything that helped a pupil solve a problem; subject matter, according to his view, was a means rather than an end.

The best known of Dewey's ideas about method is his principle of learning by doing. He taught that the active side of the child's development preceded the passive side; that movement came before conscious sensations; and that muscular development came before sensory development. He believed that neglect of these principles caused a great deal of friction in school work. He said, "Symbols are a necessity in mental development, but they have their place as tools for economizing effort; presented by themselves they are a mass of meaningless and arbitrary ideas imposed from without."

The idea that teachers should begin where the children are was certainly implicit in Dewey's teaching. He said, "I believe that the question of method is ultimately reducible to the question of the order of development of the child's powers and interests. The law for presenting and treating material is the law implicit within the child's own nature." The modern version of this part of his pedagogical creed is, of course, the philosophy of continuous growth, which holds that each child should be assisted in growing according to his natural design, without depriving the bright child of the opportunity of accomplishing as much as his ability and effort will permit or forcing the slow child to live up to standards that were never meant for him. This philosophy is inherent in many practices in modern education: the nongraded school, the levels plan, individualized instruction, and others.

Like Herbart and others who preceded him, Dewey maintained that *interest* was an important factor in learning. He did not, as some suppose, teach that the interests of the child should be the sole criterion of method. He said, "Interests are the signs and symptoms of growing power. . . . Accordingly, the constant and careful observation of interests is of the utmost importance for the educator." He stated, however, that children's interests were neither to be humored nor repressed. "To repress interest," he said, "is to substitute the adult for the child, and so to weaken intellectual curiosity and alertness, to supress initiative, and to deaden interest. To humor the interests is to substitute the transient for the permanent." The idea that children should never be told what to do was not a part of Dewey's creed. He said, "Since the teacher has presumably a greater background of experience, there is the same presumption of the right of the teacher to make suggestions as to what to do as there is on the part of the head carpenter to suggest to apprentices something of what they are to do."

Dewey regarded education as the fundamental method of social progress and reform; he believed that reforms which rested simply on the enactment

of laws were transitory and futile. He said, "Education is a regulation of the process of coming to share in the social consciousness; and . . . . the adjustment of individual activity on the basis of this social consciousness is the only sure method of social reconstruction." He believed that through education society could formulate its own purposes, organize its own means, and shape itself in the direction in which it wished to move. He said that everyone interested in education should insist that society endow the educator with sufficient equipment to perform his task. Recent publications, such as *Self-Renewal: The Individual and the Innovative Society*, and *Education for the Open Society*, are in a sense echoes of Dewey's ideas about education as a regulative agency.[9]

The work of John Dewey is one of the principal sources of twentieth century progressive educational theory and practice. It is an error, however, to equate all the doctrines and practices growing out of the influence of the Progressive Education Association with the educational theory of John Dewey. A careful reading of his *Experience and Education* reveals that he was one of the most incisive critics of the excesses growing out of a misinterpretation of progressive education theory.[10]

THE PROGRESSIVE EDUCATION MOVEMENT   Few terms are as little understood today as the term "progressive education." Some critics of modern education use the term with the intention of damning any practice in the public schools which they happen to dislike. Lloyd Williams gave a plausible explanation of this tendency when he said, "Frustrated by the seemingly insoluble problems of the twentieth century, and thereby needing something or someone to blame, some of us abuse progressive education and unorthodox educational thinkers." [11]

The progressive education movement in this country was not the creature of John Dewey or the Progressive Education Association, although both played a part in it. Far from beginning with either of these, it dates back to Comenius and Locke, to Rousseau and Pestalozzi, to Herbart and Froebel. The long list of names of those who contributed to the movement in this country would include Horace Mann and Francis W. Parker, John Dewey and William H. Kilpatrick, Boyd Bode and George S. Counts, to mention only a few. Progressive educators believe that children learn best when the material meets some recognized need, not when they are forced to memorize meaningless material; that children should have many contacts with concrete objects, places, and people, as well as with books and other printed materials; that the school should be concerned with the child's physical, emotional, and

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[9] See John Gardner, *Self-Renewal: The Individual and the Innovative Society* (New York: Harper & Row, Publishers, 1963), and Aubrey Haan, *Education for the Open Society* (Boston: Allyn and Bacon, Inc., 1962).

[10] John Dewey, *Experience and Education* (New York: The Macmillan Company, 1938).

[11] Lloyd Williams, "The Illegible Contours of Progressive Education—An Effort at Clarification," *The Educational Forum*, January 1963, p. 224.

social development, as well as with his mental development. They believe that the school should foster freedom, not license; that subject matter should be a means rather than an end in the educative process; that understanding rather than fear should be used to motivate acceptable behavior; and that purposeful activity is more productive than imposed routine.

The Progressive Education Association was founded in 1919 and disbanded in 1955. Its official journal, *Progressive Education*, ceased publication in 1957. Although it had the support of some of the most capable leaders in American education, it never had a large following. The idea that the public schools were ever taken over by the Progressive Education Association is indeed naïve. Referring to the announced principles of the Association, Hartford says, "Progressive education, on that basis, is far from being in control of American schools. Studies of the views of teachers show that they are neither progressive nor traditional but partly both.[12]

The Progressive Education Association, like the broader movement of which it was a part, has been subjected to much criticism and misinterpretation. The subject is freely discussed by many who have never consulted a single source that spells out the principles of the Progressive Education Association or recites the research findings concerning the achievements of children attending schools in which these principles were followed. Many of the misconceptions can be clarified by reading two articles in *Progressive Education*.[13] The first article sets forth the philosophy of the Progressive Education Association in great detail.

Where can we find a basic direction for American education? The Association held that the dominant ideals of our democratic culture, continuously reinterpreted and refined, provided this central direction; that every child should have the fullest opportunity for achieving his potential; that education should make people aware of social changes that force breaks with traditional ways of living and open new possibilities for the future; that it is only in the process of living and working together that the optimal development of personality can be achieved; that the school should see the child as a unity—a unique, dynamic living organism; that the physical and mental health of children should be a major concern of the school; that children should be provided with opportunities for self-expression at all stages of their development and many diverse areas of experience; and that the child should have increasing freedom to direct his own behavior as his knowledge and experience increase.

The second article is an abstract of the report of a committee appointed by the Association to evaluate the achievement of children who were attend-

[12] Ellis F. Hartford, *Education in These United States* (New York: The Macmillan Company, 1964), p. 525.

[13] The Progressive Education Association, "Progressive Education: Its Philosophy and Challenge," and "New Methods vs. Old in American Education," *Progressive Education*, May 1941.

ing schools in which the newer practices were used. Studies are reported from Lincoln School at Teachers College, Columbia University; from Winnetka, Illinois; from Roslyn, New York; and from Santa Monica, Pasadena, and Los Angeles, California. In general these studies showed superior results for pupils in schools where the newer procedures were used. It was reported also that the newer procedures were introduced into the schools to attain broad individual and social goals rather than merely for the purpose of raising the standards of achievement in school subjects. The reports, therefore, emphasized increased interest in learning, in initiative, in self-direction and in social understandings and responsibility on the part of pupils in the schools where the newer procedures were used.

The Period of Increased Responsibilities: 1929–1945

Two great upheavals, international in scope, overshadowed everything else that happened between 1929 and 1945: the great Depression and World War II. These two periods of national emergency stimulated new developments in science and technology, brought about changes in policies of the national government, and placed increased responsibilities on the public schools.

The stock market crash of 1929 marked the end of the period of prosperity that followed World War I and ushered in a period of economic depression, business failures, and unemployment. These conditions centered attention on all our institutions, and gave rise to a new way of looking at the relationship between the government and the economic system that had vast importance for the American future. This was the period of the "New Deal," of the "technocrats"—those who advocated production for use rather than for profit—of the Townsend Movement, and of many other proposals for remaking our economic machine so that it would meet our needs. These movements represented the efforts of a free people to provide a maximum of economic security for all, while preserving the features that gave the economic system its motive power. As Frederick Lewis White has suggested, "when the ship of state was not behaving as it should, one did not need to scrap it and build another, but by a series of adjustments and improvements, repair it while keeping it running—provided the ship's crew were forever alert, forever inspecting it and tinkering with it." [14]

The fears and anxieties that were present in the American culture during this period were reflected in demands for reform in the school program. It was suggested that school programs were not geared to social realities, that the schools should build a new social order, that conventional school subjects should be eliminated, and that radical changes should be made in curriculum organization. Although many of the proposals for curriculum change were

[14] Frederick Lewis White, *The Big Change* (New York: Harper & Row, Publishers, 1952), p. 105.

impractical, they did serve to focus attention on the need for a school program more in harmony with the demands of living.

World War II placed heavy demands on the American social and economic institutions and increased the responsibilities of the schools. Selective Service records revealed that an amazing number of youth were physically or mentally unfit to serve in the Armed Forces. However, United States troops fought in practically every quarter of the globe, we developed a two-ocean fleet, the airplane came into its own as a major weapon, and our country became the arsenal as well as the breadbasket of the free world. Teachers left classrooms to take their places in the Armed Forces and in war industries, while food rationing and other war-related services were added to the duties of those who remained in classrooms, and the armed services developed new methods of teaching and new instructional media. At the close of the war, teaching had risen to a new position of importance and recognition in our culture.

CURRICULUM CHANGES   An effort to assign certain developments to a specific period runs the risk of engaging in oversimplification. Some of the trends that will be mentioned had their origin long before 1929, and many of them continued beyond 1945. Nonetheless, it can be said that the following changes were clearly evident during the period under discussion.

1. Progress was made in developing a more unified elementary school curriculum. Instead of nearly twenty separate subjects taught in isolation from one another, schools began to combine these subjects into broad fields such as language arts and social studies.

2. The emphasis on democratic living in the classroom increased. Experimental evidence concerning the effects of democratic and autocratic control of groups accumulated, teachers became more expert in working with groups, and descriptions of ways teachers helped pupils identify goals, make plans, and evaluate progress became available in greater quantity.

3. The community school idea received a great deal of emphasis during this period. What was taught in school was more directly related to life outside the school. This was accomplished through class visits to places in the community, through bringing resource persons from the community into the classroom, through building the curriculum around life in the community, and through using the school as a community service center.

4. Progress was made in breaking the lock-step system of regulating pupil progress through the elementary school. Rigid promotion schedules, grade standards, and minimum essentials were being modified. More attention was given to individual differences among pupils in rates of learning. The two-division elementary school (the primary school consisting of first-, second-, and third-year pupils and the intermediate school consisting of fourth-, fifth-, and sixth-year pupils), with no annual promotions within these divisions,

gained considerable acceptance. Frequently the same teacher remained with a group of pupils for two or three years, making it possible for the teacher to understand the abilities, interests, and needs of individuals better.

5. Progress had been made toward requiring specialized preparation for elementary school teachers and principals; it was becoming less common for individuals whose preparation had been for high school work to be assigned to elementary schools. Single salary schedules and higher certification requirements had increased the prestige of the elementary school principal and teacher.

6. The traditional recitation based on a single textbook was giving way to unit teaching in which emphasis was placed on pupil participation in planning and carrying out learning activities and in which content was drawn from many sources.

7. Classroom teachers were participating more actively in determining the purposes, content, and scope of the curriculum. Committees of teachers, assisted by specialists in content and methods, were developing curriculum guides and resource units in the various curriculum areas and, in some school systems, teachers were actually writing textual materials for pupils to use.

8. The child-centered school movement (discussed in greater detail in Chapter 6) continued to influence practice during this period. It emphasized the selection of learning activities in terms of the interests and needs of pupils instead of in terms of conventional subjects. Although practices within this movement were open to much debate, the movement did much to free elementary classrooms from the dominance of memorization and abstract drill, exclusive dependence upon textbooks, and autocratic practices on the part of the teacher.

9. The social-centered, or life-centered, school movement (see Chapter 6) received a great deal of attention in the 1930s. It replaced school subjects with significant aspects of living in organizing learning activities of pupils. This movement tended to narrow the gap between school and community and gave the elementary school program social orientation.

From Hiroshima to Sputnik: 1945–1957

Soon after the first atomic bomb fell on Hiroshima in August 1945, men began to realize that a new age had been born—an age in which many of the methods and products of man would soon become obsolete. The release of the power of the atom was but a symbol of the tremendous increase in power that modern man would have available for constructive or destructive purposes. It was a dramatic illustration of the fact that man had become too powerful and the Earth had become too small to allow him the unwise use of his power.

The period between the first atomic bomb and the first artificial Earth satellite consisted of a scant twelve years, but more spectacular changes were

packed into these twelve years than during any previous period in history. The impact of this age of miracles on our institutions and on our daily lives has not yet been fully realized. Yet, one conclusion soon became apparent: It would be necessary for man to learn faster than he had ever learned before if civilization was to remain intact.

A more detailed discussion of specific changes in American life that took place during this period wll be found in Chapter 3. A brief review of the highlights of this period will suffice at this point.

After World War II, the United States reversed its policy of isolationism and embarked on a new and strange course as the leader of the free world. The effort to develop a program of joint action with other free nations has occupied the center of attention in national affairs and has supplied the dominant motive for many of the changes in school programs.

The population of the United States increased rapidly during this period and significant shifts from rural to urban and suburban living took place. Overcrowded classrooms, shortages of well-qualified teachers, and half-day sessions became common. There was a large-scale migration of Negroes from the South to the North and West and from rural to urban areas. The Supreme Court decision that racial segregation in public schools was illegal imposed a new obligation on the schools, that of integrating a new segment of the population into the life and program of the school.

The productivity of American industry increased rapidly; by 1957 the United States, with one sixteenth of the world's population, was producing half the world's manufactured goods. Human skills released by a program of universal education played a major role in this miracle of production. The advent of automation made it possible to do many jobs with machines instead of with human hands. The production of air-conditioned housing, radio and television sets, and time-saving appliances for home, farm, and factory increased rapidly during this period. New types of elementary school buildings and automated instructional media also became common.

CHANGES IN ELEMENTARY SCHOOLS   Events during this period increased the role of the United States in world affairs, reduced the size of the world in terms of hours of travel, and provided dramatic evidence of the interdependence of the people of the whole world. These developments broadened the scope of educational objectives. Learning a second language, using air-age maps or polar projections, and studying problems of the world community are cases in point.

Elementary school buildings constructed between 1945 and 1957 differed in important respects from those built earlier. Greater consideration was given to the type of program to be carried on inside the buildings. Two- and three-story buildings were giving way to one-story buildings; 74 percent of those constructed in 1951 were one-story buildings. School sites were larger, the

average size being between ten and fifteen acres. Classrooms also were larger; the typical classroom of 1950 contained nearly 400 more square feet of floor space than did the typical classroom of 1930.

The single textbook, once the principal resource for learning, had been supplemented by a great variety of learning resources. By 1954, centralized libraries were maintained in 57 percent of the elementary schools in cities with a population of 100,000 or more, 49.61 percent of those in cities with a population between 9999 and 25,000, and 41.93 percent of those in cities with a population between 5000 and 9999. The use of radio and television, motion pictures, and resource persons grew rapidly during this period.

Much progress was made during this period in providing special educational programs for exceptional children—the physically handicapped, the mentally retarded, the gifted, and the social deviates. There was an 83-percent increase in the number of schools offering special education services between 1948 and 1953. The number of pupils in kindergarten through the sixth grade receiving foreign language instruction grew from 5000 in 1941 to 300,000 in 1957.

One of the most pronounced developments during this period was in the rapid increase in kindergartens. Enrollments in kindergartens in public schools increased from 595,000 in 1939–1940 to 1,474,000 in 1953–1954. Almost all states had authorized local school systems to provide kindergartens, and in two thirds of the states local funds for kindergartens were supplemented by state funds.

Criticisms of schools, which date back at least to the year 500 B.C., established new records during the postwar period. One of the most frequent charges was that elementary schools were neglecting the fundamentals. Critics who were lambasting the schools on this issue had seldom visited classrooms in various sections of the country, studied reports of school surveys, or examined the evidence from dozens of careful studies of children's achievements.[15]

Some of the difficulties that school systems have encountered in making innovations in school programs have resulted from a lack of understanding on the part of parents and other laymen of what constitutes modern education. Too frequently in the past, it has meant to them the proposals of a few extreme radicals rather than the common-sense practices found in modern schools generally. Even in the most modern elementary school, the teacher seldom finds it necessary to choose between extremely conservative practices and extremely radical ones; instead, he usually finds it possible to choose a common-sense middle ground somewhere between the two extremes. This does not mean that the teacher goes back to traditional practices; it means that he goes forward toward common-sense modern practices. The center of

[15] See Harold D. Shane, "We Can Be Proud of the Facts," *Nation's Schools*, September 1957, p. 44.

truth in controversial issues in education—like the center of anything—is somewhere between the two sides.

From Sputnik to the Present: 1957—

This period has witnessed mounting criticisms of schools and of teacher-training practices. Criticisms of schools are nothing new, but critics reached new records of disapproval during the post-Sputnik period. There are several factors contributing to the public debate. The tremendous increase in public sums for education made necessary by increased enrollments from the post-war baby boom made many a taxpayer take a critical look at what he was paying higher taxes for. The flight of the middle class to the suburbs resulted in a concentration of parents there who sought status for their children through education and who demanded better schools. Articulate spokesmen like Admiral Rickover and Arthur Bestor made quite clear to citizens what was wrong: schools were too soft and had too many frills; teachers did not stress fundamentals like phonics and that was why there were so many Johnnies who couldn't read. Such criticisms were salt to the wounds of Americans whose national pride had been dealt a severe blow by Sputnik. There was increased concern particularly for the bright child who might conceivably right the imbalance in cold-war technology if he had the proper training. New programs in foreign languages, science, and mathematics were introduced into the elementary school. New and old systems of teaching phonics flourished. Varieties of ability grouping that had been in vogue in the twenties made a comeback, usually under a different name, and special classes for "gifted" children became commonplace in many schools. The use of standardized tests spread rapidly and more attention was paid to the results.

Although the critics offered little in the way of "hard" evidence about educational deficiencies, although their concern was chiefly for the upper-middle-class suburban child, and although their solutions were nineteenth century ("Let's go back to the good, old days and give children the kind of education that we got and that European children continue to get"), there were positive results. The American public became more concerned about the schools and more aware of the importance of education than ever before. And professional educators whose energies had been concentrated on providing the buildings and the personnel for the baby boom came to take a hard, critical look at programs, as well as facilities. An exciting period of experimentation, innovation, and evaluation in curriculum got under way.

CURRICULUM REFORM   Reform had its birth in 1952 with the establishment of the University of Illinois Committee on School Mathematics, called, in this day of the alphabet, UICSM for short. The Committee, composed of mathematicians and educators, was interested in constructing a four-year curriculum that would move the teaching of high school mathematics out of the eighteenth century and into the twentieth. With the support of special

foundation grants, the Committee developed and tested text materials and retrained high school teachers in special institutes to teach the "new math." Additional reform groups sponsored by the National Science Foundation (a federal agency) came into being and extended curriculum revision down into the junior high.

Also before Sputnik came the beginnings of reform in the sciences. In 1956 the National Science Foundation established the Physical Science Study Committee (PSSC) to construct a new curriculum in high school physics based upon the concepts used in modern physics. Preliminary editions of a textbook were tried out and today the course is in wide use in high school classes. Again, physics teachers were retrained in special institutes in the subject matter and teaching of the new course.

Curriculum reformers in the biological sciences and in chemistry swiftly followed the mathematicians and physicists. The Modern Language Association began a critical examination of the teaching of foreign languages, and a reform movement began in that curriculum area also. Reform put emphasis upon speaking the language, and upon training the student through an aural–oral (hearing–speaking) approach rather than a purely visual one. And finally a reform movement began among teachers of English, perhaps the part of the curriculum most difficult to revise. All of these reform movements followed the pattern set by the sciences of preparing trial materials, testing them in the schools, revising, publishing final versions, and setting up summer institutes to teach teachers to use the new approach.

Two things are interesting to note at this point. One is that all new curricula were the result of the cooperative efforts of academicians and professional educators who for the first time worked together to build a curriculum. The other is that the curriculum groups were nonofficial in that they were outside of the local and state educational authorities, but they met with a warm reception in many schools partly because the group had academic respectability and partly because the schools, stung by the critics, wanted to offer "harder" courses to students.

Actually, it was not the intent of the curriculum study groups to provide a curriculum that was simply more difficult; they were interested in a curriculum that would be better. "Better" in this case meant that students would study those concepts that make up the structure of a subject and are essential to an understanding of that subject. Descartes, the noted French philosopher and mathematician, articulated the principle of selection in this way: The facts to know about any discipline are the facts that can be used over and over again, or, as one writer has put it, that have mileage. Such facts are key concepts, unlocking the door to a great storehouse of knowledge. That for any action in one direction there is an equal and opposite reaction is an example of a key concept. It can be used to explain the pushing back by the broad jumper of soil or sand in order to spring forward; it also explains why an in-

flated balloon released into the air will push forward rapidly as the air jets out behind, employing exactly the same principle as that of the jet airplane. Curriculum reform, in fact, has succeeded in large measure because academicians have analyzed their disciplines to find what is important to learn.

Curriculum study groups were interested not only in content; they were also interested in method. Almost without exception, the "discovery method" is incorporated into the new materials. The essence of the discovery method is that the teacher provides materials or structures a situation so that the pupil can discover a basic concept. Thus a teacher of science might structure a series of lessons so that the class would come out with the generalization that the structure of a plant or animal is related to function.

Curriculum reform began at the secondary school level, but it was not long in emerging in the grade school, as well. Today there flourish new math, science, and social studies projects, as well as new approaches to teaching reading (and old ones under a new guise). These projects will be reviewed in detail in the appropriate chapters that follow.

For a time the major concern of many educators was education of the gifted. As the movement for civil rights got under way, however, the focus of curriculum reform was increasingly on the disadvantaged. The conscience of Americans began to hurt as the effects of social injustice upon the young were revealed in clear detail. At the same time, the viewpoint changed toward the child of the poor who might be reading at second-grade level in the sixth grade, unable to master what the school tried to teach him, obviously a candidate for early dropout. Instead of viewing him as stupid and unwilling to learn, psychologists and educators began to interpret his learning disability as due to the effects of early environment. The child who grows up in a home where there are no books, no pencils or paper, and few if any two-way conversations with adults is handicapped when he enters school, and the handicap increases as the school tries to teach him things that he is not prepared to learn. Today promising programs in preschool education are springing up all over America, and fresh approaches to remedial education for older children are being tried.

SIGNIFICANT DATES

1524   Martin Luther's letter to the mayors and aldermen of German cities

1636   Harvard University established

1647   The Old Deluder Satan Act passed by the Colonial Court in Massachusetts

1785   The Northwest Ordinance required that land be set aside for schools

1806   First Lancasterian school established in the United States

1823   First private normal school in Concord, Vermont

1829   First pedagogical book published in the United States—Samuel R. Hall, Lectures on School Keeping

1835 First state to provide for free public elementary schools—Pennsylvania

1837 Horace Mann became Secretary of the Massachusetts State Board of Education

1838 First state normal school established in Lexington, Massachusetts

1848 First graded elementary school in the United States in Quincy, Massachusetts

1867 First United States Commissioner of Education—Henry Barnard

1873 First kindergarten in connection with a public school system in St. Louis, Missouri

1879 First professional chair in Education in a university at Michigan

1890 First full-time compulsory attendance law in Connecticut

1893 The six-six plan of organization recommended by the Committee of Ten

1896 John Dewey established an experimental school at the University of Chicago

1918 Compulsory attendance laws in effect in all states

1919 The Progressive Education Association was founded

1948 *Education for All American Children* was published by the Educational Policies Commission of the National Education Association

1954 The Supreme Court ruled that public school segregation according to race was unconstitutional

1958 Congress passed the National Defense Education Act designed chiefly to promote science, mathematics, and foreign-language instruction

1965 Congress appropriated more than a billion dollars primarily to provide better educational opportunities for culturally deprived children; the "Head Start" program was inaugurated

SUMMARY

1. There is a need for a re-examination of the purposes of the elementary school in our society and for a reshaping of its program in the light of new conditions of living.

2. The curriculum is comprised of all the experiences of children for which the school assumes responsibility.

3. The problem with which the curriculum maker is concerned is not merely that of deciding what subjects are to be taught; it is, rather, a problem of improving living in the school and the community.

4. The program of public education is closely associated with the problem of maintaining a strong and free America.

5. The elementary school as it exists today represents a heritage of more than three centuries of effort on the part of intelligent and courageous men and women in all walks of American life.

6. The story of the American past cannot be fully understood by studying only the careers of statesmen and military leaders; the ideas and accom-

plishments of leaders in the cause of public education have played a significan part in making our country what it is today.

7. The fact that millions of American children are still being denied the opportunity for the full development of their powers through education represents a failure to live up to our democratic ideals and a tragic waste of our human resources.

8. A brief look at the schools of colonial times supports the contention that school programs tend to reflect the conditions and ideals of the society they serve.

9. Many leaders in early American political life recognized the necessity for universal education as a basis for the success of a democracy.

10. The period of the public school revival (1837–1876) made elementary education available at public expense to children in all except the Southern states, but the schools were still operated on the aristocratic principle of selection and elimination, with little consideration for the democratic concept of educating every child for effective participation in the life of his community, state, and nation.

11. Several factors combined during the period from 1876 to 1929 to make the elementary school a place for learning facts and skills, with little regard for developing desirable social behavior, creative expression, and wholesome attitudes.

12. Much progress has been made since 1929 in bringing about a basic reorganization in the elementary school program. Important gains have been made in bringing more unity, more reality, and more democracy into the school experiences of children.

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Prentice-Hall, Inc., 1955. This book shows how the school has responded to demands of the culture at various periods in its development and identifies major issues regarding public education.

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Saylor, J. Galen, and William M. Alexander, *Curriculum Planning for Modern Schools*. New York: Holt, Rinehart and Winston, Inc., 1966. Chapter 1 explains the modern concept of curriculum and presents some basic issues in curriculum planning.

SELECTED FILMS

Design of American Public Education. A two-reel sound film showing the organization and structure of American public education; contrasts central control of education with democratic control, and emphasizes the importance of the teacher. (McGraw-Hill, Inc.)

Horace Mann. A two-reel sound film presenting important episodes in the life of the "father of the common schools." (Encyclopaedia Britannica Films)

Education in America: The Seventeenth and Eighteenth Centuries. A one-and-one-half-reel sound film showing the early beginnings of education in colonial America: early New England school laws, dame schools, Latin grammar schools, church schools, and pauper schools. (Coronet Films)

Education in America: The Nineteenth Century. A one-and-one-half-reel sound film tracing the development of the free public school systems from the Northwest Ordinance to 1900: the district system, tax support and state control, textbooks, compulsory attendance, and teacher training. (Coronet Films)

	Colonial Period 1647–1776	National Period 1776–1876	Expansion & Reform 1876–1929
Dominant Motive	Religious	Political	Economic
Curriculum Content	Reading, writing, spelling, arithmetic, prayers, hymns, catechism	Reading, writing, spelling, arithmetic, physiology, hygiene, grammar, composition, history, geography, drawing, music, agriculture, good behavior	Reading, writing, spelling, arithmetic, grammar, composition, history, civics, geography, music, art, drama, domestic science, agriculture, manual training, physiology, hygiene, nature study
Administrative Organization	Ungraded	Ungraded rural schools Graded city schools	Graded Departmental Platoon
Typical Schools	Dame schools Apprentice schools Reading & writing schools Ciphering schools	Kindergartens Eight-year elementary schools	Nursery schools Kindergartens Six-year elementary schools
Methods	Memorization Individual instruction	Monitorial system Group instruction	Recitation Supervised study Project method
Curriculum Organization	Separate subjects	Separate subjects	Separate subjects Correlation Fusion
Teacher Education	None	Normal schools	Teachers colleges Schools of education In-service education
Materials	Hornbook New England Primer	Ungraded textbooks	State-adopted texts in each subject

Increased Responsibility 1929–1945	Hiroshima to Sputnik 1945–1957	Sputnik to Present 1957–
Social-intellectual	International understanding	National survival
Language arts, social studies, arithmetic, science, the fine arts, health and physical education	Same areas as in the previous period. Increased emphasis on learning a second language, problems of the world community, and air-age education	Increased emphasis on mathematics, science, and foreign language. More difficult content moved down into elementary school—beginnings of algebra and geometry
Grade divisions disappearing	Experimentation with new types of organization	Ungraded elementary school increasingly used; dual-progress plan introduced
Early childhood Later childhood	Primary schools Intermediate schools Community schools Integrated schools Segregated schools	Nursery schools and kindergartens increasing; more schools becoming integrated
Recitation Experience units Committee work	Recitation Experience units Team teaching	Styles of teaching becoming more clearly defined; role of teacher being more clearly defined
Separate subjects Correlation Fusion Integration	Separate subjects Fusion Integration Trend toward special teachers for certain subjects	Broad field curriculum the most used type of organization; unified social studies program remained almost universal
Increased specialization	Growth of national accreditation agencies	More emphasis on preparation of teachers in content areas; efforts to integrate theory with practice in school situations
Textbooks, libraries, excursions, audio-visual materials, maps, globes, charts, periodicals	Addition of radio, television, and teaching machines	Much criticism of textbooks, particularly in reading; trend toward preparation of textual materials oriented to local community

Photo Comment

TRADITIONAL AND MODERN SCHOOLS

Those critics of modern education who speak nostalgically about the traditional schools of an earlier day have forgotten—if they ever knew—what those schools were like. The two photographs on the facing page illustrate some rather dramatic differences between old and new. The picture at the top depicts a classroom at the beginning of the twentieth century. Classes were well disciplined; children sat quietly in their seats, hands folded on the desk or arms crossed behind their backs, waiting until the teacher called on them to give an answer. In reading class, all pupils "read" from the same book at the same time; the teacher called first upon the brightest pupil who sat in the front seat in the first row. Slow learners stumbled through, prompted by the teacher on almost every word, while fast learners sat in bored but disciplined silence, afraid to relieve the monotony by peeking at the next page.

The formal discipline of the old school is missing in the bottom picture. Gone are the stiff postures and pin-drop silence of the earlier pupils. There are times when absolute silence is demanded in the modern classroom, but usually the noise level permitted is related to the activity on hand. Gone, too, are the bored hours of patient waiting when young, quick minds had to be quiescent for most of the day, trying to find their own mental stimulation, since it was completely lacking in the outside environment. In the modern school, discipline and learning are derived from the pupil's absorption in constructive work. There are, of course, genuine deficiencies in today's schools and we will try throughout this text to point out the areas in which these deficiencies exist. But a return to the educational program represented in the top picture is obviously not the answer.

We are in an era of educational innovation. Not only are there the well-publicized "new math" curricula but also new and exciting science and social studies curricula. Teaching aids, science laboratories, and devices for programmed learning are multiplying in elementary schools. School systems are experimenting with new ways of grouping, new evaluation procedures, a staggered beginning to the school day, and new teaching methods. The knowledge explosion will tax man's efforts in cultural transmission and not all the new experiments will "work," but solutions lie in fresh approaches rather than a return to the past.

Photos by Brown Brothers (top) and The New York Times (bottom)

Problems and Projects

NOTE: Lest the instructor, the student, or the in-service teacher become disturbed by the lack of definitive answers to the questions about to be raised, let us explain that in many cases there are no "right" answers. The problems and projects are intended to stimulate thinking and to help the reader see the relationship between the content of the chapter and actual classroom practice. The reader will find that his answers will be based upon his own value system—that is, upon what he conceives to be right and good and true. This, in turn, depends upon his grasp of the concept of democratic education and his knowledge of how children grow and develop. It is hoped that this text will aid the teacher in building a sound value system so that his "answers" will result in better education for American children.

1. Often when classroom teachers visit laboratory schools, they say wistfully, "Oh, if only I had such ideal conditions, a small class and an assistant and good equipment, I could be a good teacher, too"; "If only we had the money" has been an oft-repeated lament. Unfortunately, these types of comments have also served as excuses for maintaining the status quo. For some teachers it is easier to continue to teach the same old material in the same old way year after year.

But in the years to come lack of money will no longer be used as an excuse for not changing. Already there are federal funds available to reduce class size, to provide extra teachers and extra personnel to meet other needs of the children of the poor. School administrators can apply for such funds and, with creative planning, educational reform can be instituted. It is only a matter of time before "ideal" conditions will be available so that reform can be widespread.

Visit a fourth grade in a poor section of your home town, and then visit a fourth grade in the "best" section. On what things would you as a teacher of the poor spend money, to close the gap between the two groups? One teacher suggested new social studies texts as her solution to the problem. Would you agree?

Here are some questions to guide your observations and to help at arriving at proposed solutions:

   a. What differences in intellectual and social behavior do you find in the two groups?
   b. What learning problems would a reduction in class size to fifteen pupils and the addition of a teaching assistant help to alleviate?
   c. What special services do you see a need for?
   d. Are there educational resources available in one school that are not available in the other?

Check your findings against those of M. Deutsch, "The Disadvantaged Child and the Learning Process," in A. Harry Passow (Ed.), Education in Depressed Areas (New York: Bureau of Publications, Teachers College, Columbia University, 1963), pp. 163–180.

2. Too often, reform in the schools has been "reform" in name only. The same old curriculum is in effect, but it is updated in title, thus, as one astute writer observed, keeping a chicken in the classroom for observation has been called a "directed activity," a "child-centered" experience, a "group project," or a "learning situation," depending upon the times. Similarly in some schools homogeneous grouping becomes the nongraded school, and departmentalization translates into team teaching, with no change in practice.

The above observation is made not to make the reader cynical but to make him a more critical observer of the educational scene. Excellence in education involves more than a change in what something is called; there must be changes in substance as well.

You can see for yourself whether significant changes have occurred in the teaching of arithmetic. First examine a course of study and an arithmetic text for one of the primary grades published at least ten years ago. Then examine a recently published course of study and text for the same grade. Are there significant changes in content? Are there concepts and topics being taught today that were not included ten years ago? Is the "new math" really new in the course of study and text that you are examining, or has only a new label been applied?

3. Education is very much in the news today, and on a variety of fronts. Search the New York Times for a week, the weekly news magazines, monthly periodicals, and your local paper for articles dealing with the schools at all levels. List titles and write a brief digest of each article. Pool the results in class under such headings as: federal expenditures for education, segregation in the schools, compensatory education, curriculum experimentation, and the impact of technology upon education. Analyze for trends.

An interesting term paper could be prepared, involving a content analysis of these articles with those from the same sources but published ten years ago. What were the topics that were newsworthy then as compared to now? Of the total number of articles dealing with education, what percentage dealt with the topics listed above and with other topics that your class listed?

The Child
as a Learner

Since learning is based on the child's personal and purposeful perception of events, it is important to have access to information about the pupil which identifies his specific needs, values, and goals. Plans for learning experiences must go beyond a mere cataloging of cognitive traits and include purposes and feelings.

—Don C. Dinkmeyer, *Child Development: The Emerging Self* (Englewood Cliffs, N.J.: Prentice-Hall, Inc., 1965), p. 141.

A better understanding of the learning process and of principles of human growth and development have been important factors in bringing about changes in the elementary school program. There is evidence that the more effective teachers are generally those who know most about the pupils whom they teach. What is learning? How can new insights about human development be used in curriculum planning? To what extent can the instructional program be shaped by what is known about likenesses and differences in children? In what ways does the influence of the culture mingle with the individual's biological inheritance to affect his development? Information relating to these questions is an indispensable phase of the preparation of all who expect to participate effectively in curriculum improvement.

THE WORK OF THE TEACHER

Teaching is not only one of the most important of the professions from the standpoint of human welfare; it is also, when properly understood, one of the most technical and difficult. The teacher is not merely a person who assigns lessons to pupils and then checks to see whether the lessons have been learned; the teacher is a builder of human lives and a trustee of the cultural heritage held by each generation for the enrichment of the next.

Some tasks to be performed in our society are so crucial to the well-being

of citizens that they are reserved for those who have received years of rigorous preparation—they are reserved for professionals. The engineer is expected to have thorough preparation in mathematics, mechanics, and other basic disciplines that contribute to his professional competence. Insufficient mastery of these basic disciplines on the part of an engineer might result in a defective bridge or building and the consequent loss of money or property or life. The surgeon must know anatomy, physiology, and other relevant sciences because human lives depend upon it. Teaching is also a task for professionals. It is difficult to estimate the extent to which superficial knowledge of human growth and development, applied in classrooms from day to day, results in wasted lives, discouragement, delinquency, crime, and unhappiness. On the other hand it is almost impossible to estimate the worth of a competent teacher in terms of released potentials, economic growth, social progress, and human happiness.

CONCEPTS OF LEARNING

This chapter can not attempt to review the various theories of learning or schools of psychology, which constitute a major field of study in themselves. Teacher-education programs usually include a thorough course in the psychology of learning, and many public school systems provide in-service education that enables teachers to gain a clearer understanding of the learning process. The purpose here is merely to characterize briefly some of the concepts of learning that have influenced the development of the elementary school curriculum.

Learning as the Acquisition of Knowledge and Skills

Learning has for many years been regarded as being identical with knowing. But teachers who regard learning merely as the acquisition of knowledge and skills give too little consideration to the use children make of knowledge and skills in the solution of actual problems of living. For example, the teacher may be so concerned with the child's ability to name the bones of the body and trace the circulation of the blood that he fails to provide experiences through which the child learns to live more healthfully from day to day. The teacher may be so intent on teaching the rules of grammar and the conjugation of verbs that he overlooks opportunities for helping children learn to speak and write more effectively in actual situations that require writing and speaking. Thus, learning may come to be divorced from living, may be regarded as something that comes primarily from textbooks, and may have little relation to the problems and interests of children. The proof of learning, according to this concept, is the ability to recite back to the teacher the material that has been memorized rather than the changes that have taken place in the behavior of the pupil.

This concept of learning influenced every phase of the traditional elementary school program. Rows of seats screwed to the floor, teachers trained in the presentation of subject matter in a limited field, motivation based on rewards and punishment, examinations designed to test memory of facts, annual promotions based on minimum grade standards, in short, the whole mechanized procedure of the traditional elementary school flowed naturally from this narrow, static concept of learning.

Learning as the Modification of Behavior

There has been increasing acceptance in recent years of the view that learning is the modification of behavior that comes about through interaction with the environment. The acquisition of knowledge and skills is involved in learning, but this represents only a part of the process. Learning, in the broader sense, takes place only when an individual has an experience that influences his behavior and makes him a different person.

This concept takes into account the influence of more factors in the learning environment than did the learning-is-knowledge concept. That the child may learn from the textbook is recognized, but he may also learn from another pupil, from something he sees on a trip, or from something that happens to him at home. Learning is a function of the total environment of the child.

This concept also takes into account the effects of the learning experience upon personality or character. If the child has really learned, he will behave in a different manner in the future. This is the everyday, common-sense meaning of the word *learn*. When the mother tells her child, "You will have to learn not to put your finger on a hot stove," she does not mean that the child should get a book and memorize the sentence "Do not put finger on hot stove." She means, rather, that the child should get so he does not put his finger on a hot stove. The proof of learning is behavior.

The worth of the teacher is determined not alone by what the child knows but also by what the child does. What Johnny has done in arithmetic is important, but what arithmetic has done to Johnny is still more important. If he has learned arithmetic and at the same time learned to like school, to do his own work, to continue with a task until it is finished, and to do his work accurately and neatly, in short, if he has developed desirable personality traits as a result of the way in which he learned arithmetic, then his experience with arithmetic has been successful. The learning of subject matter influences personality development.

The Mechanistic Concept of Learning

Theories of learning have been classified as association versus field theories and as mechanistic versus organismic concepts. Such classifications are

admittedly somewhat arbitrary; members of any of the so-called schools of psychology differ among themselves; and specific issues cut across the various fields. Nonetheless, the older explanations of learning, the ones that influenced instructional practices of traditional schools, were forms of the mechanistic logic of the times, which dominated the thinking not only of psychologists but of sociologists and biologists as well.

The age of the machine, which resulted from developments in the physical sciences, had a tremendous impact on men's thinking in regard to the structure and organization of society, the human organism, and the learning process. Society was thought to resemble a great machine, and individuals were regarded as smaller machines operating within the culture. The human being was regarded as merely the summation of specific parts operating as a machine in response to mechanical laws.

The mechanistic concept of learning assumes that wholes are built up from parts; that learning is an additive process, like adding bricks to a wall; that parts have meaning in isolation; and that repetition and drill are sufficient to produce learning. The alphabet approach to the teaching of reading and the drill method of teaching skills in general flowed naturally from the mechanistic concept of learning.

The Organismic Concept of Learning

According to the organismic concept, learning is a growth process rather than an additive process; it is the result of insight, maturation, and differentiation rather than repetition; and it follows the pattern of growth of living organisms rather than that of inorganic bodies. The human embryo is at first an undifferentiated mass; the parts appear gradually through the process of maturation and differentiation. The mental growth of the child proceeds according to this same principle; whole concepts appear first, and separate elements have meaning only because of their relationship to wholes. The child's first concepts are class concepts. Thus, any animal may be called "dog." Later the child's concepts become more specific, so that he is able to differentiate between "dog" and "cat."

Organismic, or "field," theories of learning have important implications for the elementary school curriculum. They emphasize the role of such higher mental processes as insight and reasoning in learning, the value of seeing relationships and the ability to categorize, and the development of skills in connection with meaningful activities in which they are used. The experience unit in the social studies, learning to read through the use of experience charts, and the shift from parts to wholes in teaching arithmetic, music, art, and language are examples of the influence of the organismic concept on school practice. The recent nationwide curriculum projects in mathematics, science, and other areas illustrate many of the applications of the organismic theory.

MECHANISTIC VERSUS ORGANISMIC CONCEPTS

The Mechanistic Concepts	The Organismic Concepts
Human behavior follows the same laws as machines.	Human behavior follows the pattern of growth of living organisms.
Learning is an additive process.	Learning is a process of growth, maturation, and differentiation.
Parts have meaning in isolation.	Parts have meaning only because of their relationship to wholes.
Learning represents the formation of specific bonds or connections in the nervous system.	Learning involves the whole organism.
Learning is the result of repetition.	Learning is the result of insight, maturation, and differentiation.
Learning is piecemeal.	Learning is unitary.
The laws of learning differ from the laws of physical growth.	Physical and mental growth follow the same laws.
The learner reacts to a single stimulus from the environment.	The learner reacts to a configuration or field of stimuli.
Facts and skills are learned by drill on isolated parts.	Facts and skills are learned by use in meaningful situations.
The whole is equal to the sum of its parts.	The whole is greater than the sum of its parts.
Parts come first.	Wholes come first.

Fundamentals of the Learning Process

As a result of the work of learning theorists, we are beginning to have a much clearer picture of what learning is and how modification of behavior through learning occurs. Consider Susan's behavior during a reading lesson. As the casual observer sees it, Susan gets stuck on a word during the reading lesson, the teacher helps Susan, Susan reads the word correctly, and a few minutes later, when she again encounters the word, Susan repeats it correctly. She has "learned" it, the visitor notes.

But this simple act of successful learning can also be analyzed so that we can identify four fundamentals of the learning process. According to Dollard and Miller,[1] in order for learning to occur, four elements must be present:

1. *The child must want something.* There must be a *drive* or a need to learn. This drive or need is the result of tension in the organism that the organism seeks to reduce. Susan wants to be able to read the word—perhaps to please the teacher, perhaps to do well before her classmates, perhaps because her parents value reading. The teacher notes signs of tension in Susan; when she is stuck on a word, Susan twists the pages of her book and moves restlessly in her seat.

[1] J. Dollard and N. E. Miller, *Personality and Psychotherapy* (New York: McGraw-Hill, Inc., 1950).

2. *The child must notice something.* This is the cue. In Susan's case the teacher helps Susan "notice" the right cues by pointing out the similarity between the word Susan is stuck on and a word she already knows.

3. *The child must do something.* Susan must makes a response in order to learn. She may make several responses in trial-and-error fashion, with the teacher correcting the wrong responses.

4. *The child must get something.* Reward must follow the response. When Susan called the word correctly, the teacher's exclamation, "Right," served as a reward and Susan's tension, which arose when she first encountered the new word, was reduced.

In the future each time Susan reads the word correctly and reward is forthcoming, the tendency to make that same response is strengthened. The reward eventually may be her own pleasure in being able to read smoothly. This type of learning we call learning by reinforcement, or effect learning.

Learning theorists are also making an important contribution to a new definition of "conditioning." The analysis of the four fundamentals of learning presented above explains how the child acquires new skills and new knowledge. But children also learn new needs or drives; they learn to want acceptance by their peers; they learn to like social studies or hate arithmetic; they learn to work for good grades; they learn to like or to dislike school. How do they learn these emotional attitudes? The concept of conditioning helps us to understand the process.

Suppose that Susan's teacher, instead of helping her with the difficult word, had said, "Susie, you're being very stupid. You've had that word before. Now don't be lazy—try to sound it out for yourself." Now tension within Susan mounts. She is afraid of the teacher's wrath. She looks again at the word but cannot see it. The tension becomes intolerable and she bursts into tears.

If Susan is again reprimanded and experiences fear when she encounters a new word, she may learn to associate fear and new words. In other words, she may be "conditioned" so that seeing a new word will make her afraid. This fear may be so strong that it will stand in the way of her learning to read. We may say then that Susan has an emotional block to reading. Through this same process of presenting two cues or stimuli to the child at the same time, we can also build favorable emotional attitudes toward learning.

As learning theorists spell out principles of learning in more detail for us, the teacher can more effectively guide the learning process. As a teacher of the skills, she will be on the alert to note which cues children are picking up; sometimes she may ask children to do their thinking out loud for her so that she can discover those instances where her pupils are paying attention to the wrong cues. She will provide drill with reinforcement so that the proper responses will be strengthened in her pupils. And she will be careful to make

first experiences with new learnings rewarding to children so that desirable emotional attitudes can be established.

THE STUDY OF HUMAN BEHAVIOR

There is widespread disagreement concerning specific roles that the school plays. There is increasing acceptance, however, of the idea that one important role should be that of helping children become adequate, fully functioning persons. This role, as the preceding paragraphs have pointed out, involves a great deal more than the acquisition of information. The study of the foundations of human behavior has, therefore, been receiving an increasing amount of attention.

Like the study of medicine, the study of human behavior began with mysticism and spiritualism. It was once explained in terms of good or bad spirits that were supposed to inhabit the blood vessels; later it was explained in terms of bodily structure, especially the shape of the cranium; and still later it was explained in terms of the mind, or mental processes. A textbook in psychology, for example, contained chapters on sensations, attention, apperception, memory, imagination, and reasoning. The trend in recent years has been toward the direct study of behavior and of the conditions that influence it. The evolution of the study of human behavior is illustrated by the flippant remark that psychology first lost its soul, then lost its body, and now has lost its mind.

Growth, Learning, Development

These terms are used over and over as one examines the literature on human behavior and child study. An understanding of the meaning of each and of the relationships among them is, therefore, central to the task of the teacher who is concerned with the modification of behavior. Other professional persons are, of course, concerned with these processes, usually within a framework which differs somewhat from that of the teacher.

Growth is a characteristic that is shared by all living things. The term is generally used to denote increases in the amount of something such as height, weight, and size of muscles. Growth is influenced to a large extent, although not entirely, by factors within the learner that cannot be controlled or altered very much by the teacher or by other environmental factors.

Learning, on the other hand, refers to changes in the behavior or performance of an individual that are the result primarily of the activities of the individual himself as he interacts with the environment. Gagné says, "Learning is a change in human disposition or capability, which can be retained, and which is not simply ascribable to the process of growth." [2] He states further that the kind of change called *learning* is exhibited in a change in be-

[2] Robert M. Gagné, *The Conditions of Learning* (New York: Holt, Rinehart and Winston, Inc., 1965), p. 5.

havior. This should not be taken to mean that growth and learning are independent phenomena any more than it should be taken to mean that learning is confined to the accumulation of information relating to school subjects.

Development is the term that is generally used to denote changes that result from the combined influence of growth and learning. Gagné has pointed out that "human development in all its manifestations must depend on the twin factors of growth and learning and their interactions with each other." [3]

The student should realize that a writer may select a limited segment of the broad field of human development as his topic. Almy has pointed out that the pendulum has swung from emphasis on habit training during the thirties to preoccupation with social and emotional aspects of development to concern with personal and subjective aspects of child behavior and, recently, to the intellectual aspects of development. [4] Gagné, whose writing illustrates the current emphasis on intellectual development, explains, "The reader needs to be made aware, also, that there are some problems of great importance to education which cannot be solved by applying a knowledge of the principles of learning as they are described here." [5] He mentions particularly attitudes and values as those aspects of human development which are learned.

INTELLECTUAL DEVELOPMENT

Recent innovations in elementary school instructional programs have stimulated many inquiries into the nature of the intellectual development of children. Can many children begin the learning of difficult subjects much earlier than has been supposed? Is there a critical period in the life of a child when what he will achieve in school and what kind of person he will become is determined to a large degree? What factors are involved in concept development? How is the structure of knowledge related to learning? What conditions influence learning by discovery? To what extent can the school foster critical thinking? What is the role of problem solving? Curriculum workers are becoming increasingly dependent upon research in the area of intellectual development in dealing with problems raised by these questions. It is appropriate, therefore, to call attention to some of the significant contributions of research in this area.

The Crucial Period

Early childhood is the crucial period in the intellectual development of individuals. The quality of the perceptual and verbal experiences a child has

[3] *Ibid.*, p. 3.
[4] Millie Almy, "New Views on Intellectual Development in Early Childhood Education," in Association for Supervision and Curriculum Development, *Intellectual Development: Another Look* (Washington, D.C.: The Association, 1964), p. 12.
[5] Gagné, p. 23.

in his early years determines to a great extent his achievement in later years. Worth has pointed out that the "critical-years hypothesis" is not new, but that there is a great deal of new evidence to support it.[6] He cites studies which reveal that (1) approximately 50 percent of general school achievement attained at grade twelve has been reached by the end of grade three, (2) in terms of intelligence measured at age seventeen, about 50 percent of the development takes place between conception and age four, about 30 percent between ages four and eight, and about 20 percent between ages eight and seventeen, (3) language structures and speaking habits of many children are almost completely set in the early years, (4) for boys particularly, the period between the ages of six and ten is the crucial time for the crystallization of the desire for task mastery and intellectual competence, and (5) the qualifications and salaries of elementary teachers correlate more highly with retention rate than do those of secondary school teachers. These data strongly support the following measures: extending school services for children under six years of age; providing more adequate guidance services at the elementary school level; permitting pupils to progress through the school program according to their own rates of learning; and improving the quality of instruction in the kindergarten and primary grades. These studies also have implications for current programs such as the Head Start program for culturally deprived children and the effort to do something for school drop-outs.

The School's Responsibility

The school has a responsibility for helping children think critically. The realization that citizens in a free society must be able to think clearly about the great problems and issues that have a bearing on their lives; the demand created by automation for individuals who can think, analyze, and make decisions; and the desire to have the schools do something to counter the lack of appreciation for intellectual attainments so prevalent in our society are some of the factors that account for a renewed interest in understanding and guiding children's thinking.

Since John Dewey's *How We Think* was first published in 1910, a great deal of progress has been made in the study of thinking. Several important volumes dealing with this aspect of human development have been published during the last decade.[7] These publications deal with a wide range of topics, such as what thinking is, the abilities that are involved in thinking, the extent to which thinking can be taught, and the extent to which ability to think

[6] W. H. Worth, "The Critical Years," in *The Canadian Administrator* (Edmonton, Canada: University of Alberta, January 1965).

[7] See particularly David Russell, *Children's Thinking* (Boston: Ginn & Company, 1956); William H. Burton, and others, *Education for Effective Thinking* (New York: Appleton-Century-Crofts, 1960); and Richard C. Anderson and David P. Ausubel, *Readings in the Psychology of Cognition* (New York, Holt, Rinehart and Winston, Inc., 1965), Part Four.

developed in one area can be transferred to other areas. Along with these publications dealing with the general problem of teaching pupils to think, reports of current curriculum projects in mathematics, science, and other areas are replete with references to the objective of teaching pupils to think, problem solving, and the act of discovery. (See Chapters 9 through 14.) The Commission for Instruction and Curriculum of the Ohio Association for Supervision and Curriculum Development has provided a publication that should be very useful to teachers, supervisors, and principals who are interested in doing a better job of teaching their pupils to think. The publication contains an introduction and chapters dealing with critical thinking in language arts, social studies, science, mathematics, the arts, and physical education.[8]

Research in this area reveals that many traditional beliefs about children's thinking are unfounded; the belief that fantasy holds a predominant place in the mental life of children and the idea that young children are incapable of understanding causal relationships are examples of such unfounded beliefs. On the other hand, these studies reveal that (1) curiosity is an outstanding trait of young children, (2) children acquire a vast amount of information by asking questions, and (3) critical thinking manifests itself early and grows gradually rather than manifesting itself suddenly at high school or college levels. A wide range of concrete and verbal experiences supply the raw materials for critical thinking; critical thinking begins with problems relating to the child's previous experiences; pupils need opportunities to discover knowledge and ways of solving problems instead of having these imposed by the teacher; and evaluation procedures exert a powerful influence on the child's thinking processes.

The Structure of Knowledge

The structure of knowledge is an important factor in learning school subjects. The relation of the structure of knowledge to effective learning has been receiving serious attention for several years. Curriculum workers have been turning to scholars in the various disciplines for information relating to the structure of their fields, and cognitive theorists have been emphasizing the role that structure plays in the learning process.[9]

Language-arts programs have been increasingly influenced by new insights into the structure of the English language; the elementary school mathematics program has become more concerned with the mathematical and less concerned with the social aspects of the subject; the new science program emphasizes the nature of scientific investigation rather than the social applications of science; social scientists, who are participating more actively in the develop-

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[8] Ohio Association for Supervision and Curriculum Development, *Teaching Critical Thinking in the Elementary School* (Columbus, Ohio: Ohio Education Association, 1964).

[9] See Jerome S. Bruner, *The Process of Education* (Cambridge, Mass.: Harvard University Press, 1962).

ment of social studies programs in elementary schools, insist that each subject be taught according to the structure of the discipline; and musicians and artists call for elementary school programs that emphasize the basic elements in music and art. The authors of a recent book on the structure of knowledge suggest that the disciplines need examination in terms of their structure if curriculum development is to proceed properly.[10]

Curriculum Design

Curriculum design is an important factor in effective learning. Curriculum workers are gaining new insights from studies on cognition relating to such persistent problems as continuity in learning, relating new learning to what has already been learned, and planning the scope and sequence of learning activities. Gagné has called attention to this problem in the following statement:

> The planning that precedes effective design for learning is a matter of specifying with some care what may be called the *learning structure* of any subject to be acquired. In order to determine what comes before what, the subject must be analyzed in terms of the types of learning involved in it.[11]

Bruner has cited recent evidence that tends to challenge traditional concepts of readiness for learning. He urges educators to be careful about assigning an absolute level of difficulty to any particular topic, and provides substantiation for the following hypothesis:

> We begin with the hypothesis that any subject can be taught effectively in some intellectually honest form to any child at any stage of development.[12]

Bruner uses the term "revisits" in discussing the "spiral" system of grade placement of content which introduces pupils early in their school experience to topics that they will study in more complex forms later. Chapters 9 through 14 provide many illustrations of the application of this scheme to mathematics, science, the social studies, and other curriculum areas.

The Development of Concepts

The development of concepts involves a higher level of learning than the acquisition of specific facts. The explosion of knowledge in science and in other fields of study is increasing according to a geometric ratio; knowledge in any field begets more knowledge. As a consequence, merely imparting information can no longer suffice as the principal purpose of the school; the role of the school has become increasingly one of equipping pupils with the resources for life-long learning.

[10] G. W. Ford and Lawrence Pugno, *The Structure of Knowledge and the Curriculum* (Skokie, Ill.: Rand McNally & Company, 1964), p. 5.
[11] Gagné, p. 25.
[12] Bruner, p. 33.

A *concept* may be regarded as an extension or generalization of understandings derived from an interpretation of certain facts and knowledges. Hall has identified five steps in the teaching-learning process as follows:

> Acquiring appropriate education for life is dependent upon articulate progression through five significant steps. These five teaching-learning steps provide valuable educational experience as a result of (1) gathering facts, (2) sorting facts to gain knowledges, (3) assimilating knowledge relationships to develop understandings, (4) reflecting on understandings to form concepts, and (5) applying these concepts through actions that reflect an attitude.[13]

In a publication that is discussed in greater detail in Chapter 15, Bloom and others identify six objectives of the teaching-learning process: knowledge, comprehension, application, analysis, synthesis, and evaluation.[14]

Current curriculum-development projects are recognizing to a great extent the necessity for using significant concepts or generalizations in the various fields of study as the structure upon which to organize curriculum content. (See Chapters 9 through 14.)

Piaget's Theory of How Intelligence Develops

A section on the intellectual development of children would not be complete today without the inclusion of a discussion of the contribution of Jean Piaget. Piaget is a Swiss psychologist who has been working in Geneva for over forty years in attempts to trace the development of intelligence from birth to adolescence. He and his colleague, Mlle Inhelder, have devised a series of ingenious techniques to get at the thinking processes of children. They present the child with a task demanding a logical solution and analyze the child's answers. From their research, they have put together a picture of how logical intelligence develops.

A graduate class of elementary school teachers is observing a six-year-old boy perform on one of Piaget's tasks. The boy is shown a box of wooden beads, most of which are red but two of which are yellow. First it is established by questioning that all of the beads are made of wood, that some of the beads are both red and wooden and two of them are yellow and wooden. All of this the child understands. Then the experimenter says, "Are there more red beads or more wooden beads?" The boy answers, "More red beads because there are only two yellow ones." The experimenter reviews the facts so far, and the boy asserts again that, yes, all the beads are made of wood. Then the question is rephrased, this time in terms of the comparative length of a neck-

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[13] Ernest Carl Hall, *Selected Areas of Personal Economics Conceptually Defined* (Norman, Okla.: University of Oklahoma, unpublished doctoral dissertation, 1964), pp. 41–42.

[14] Benjamin S. Bloom (Ed.), *Taxonomy of Educational Objectives: Handbook I— Cognitive Domain* (New York: David McKay Company, Inc., 1956), p. 2.

lace made of wood and one made of red beads. Again the subject insists that the red one will be longer because there are only two yellow ones.

In the discussion that follows, the teachers express dismay that a six-year-old could give answers so obviously wrong. They insist that the boy really has the ability to solve the task and that he is merely confused by the language. "He didn't listen carefully enough," is the usual explanation. But if the task were to be repeated, perhaps in a different format but one where the distinction between "all" and "some" is still crucial, the boy will fail again. It will become quite clear that he understands the facts in the problem, but that when he is asked to compare the whole with a part, he loses sight of the whole and compares a part with a part.

Another common reaction of teachers when they hear a pupil giving a wrong answer is that there is something peculiar to the apparatus that induces such a response. A ten-year-old is given two metal cylinders to hold, identical in appearance, but one weighing twice as much as the other. He is asked to predict what will happen when each is immersed in a separate beaker of water. He predicts that the heavier one will make the water level go up higher. "It pushes harder on the water and pushes more up," he will say. He is then asked to insert each cylinder in its beaker, and is astounded to see that the water in each container goes up to exactly the same level. Again the observer finds it hard to accept the lack of logic in the child, and in this case argues that the child thinks wrong about the problem because he is accustomed to associating metal cylinders with the weights used in two-pan balances, although, in fact, it is a rare child who has seen such a set of weights.

To the mature adult, the illogic of the child is incomprehensible. Despite the teacher's professional sophistication, he *expects* the child to give the right answers to such seemingly simple problems. It is disconcerting, to say the least, to have the child so steadfastly adhere to what is logically not possible, and when the child does give wrong answers the teacher is even more at a loss as to what to do next than he is in the classroom. At least in teaching a class, one can always call on another pupil and hope that his answer is right! Rare is the teacher who knows how to get at the confusion in the child's thinking, and even rarer the teacher who can help the child to set himself straight in his thinking. But if we accept as a goal of education the improvement of thinking, then teachers must be able to diagnose thought processes. Piaget's great contribution has been precisely on this point. His theory is helpful in understanding the nature of the mental operations a child engages in when he answers a question, and how these mental operations change at different stages in the course of development.

Piaget's developmental theory begins in the cradle. The first stage, covering the first eighteen months of infant life, is that of sensori-motor intelligence. From his own motor actions and from what he sees, hears, touches, or

otherwise senses, the infant assimilates sensations about the physical world. Such sensations are stored away in developing mental structures. With each fresh sensation, the mental structure changes to accommodate the new information, and behavior is changed accordingly. From his many experiences in grasping objects, for example, the infant comes to accommodate his fingers to the shape of the object to be grasped, in one fashion for a rattle and another for a bottle. At the same time there are developing mental structures containing information about how an object relates to space, and so the infant may, for example, in trying to get a long narrow object between the slats of his playpen, turn the object sidewise, accommodating his behavior to the shape of the object. During the first two years of life, mental structures continue to develop and change. Through sensory perceptions and motor experiences, new information about objects and the space they occupy, about time and causality, is assimilated, and structures are accordingly modified. The baby acts and perceives the consequences of his action. If the consequences jar with what is already structured mentally, the mental structure is modified to restore equilibrium to the system. His intelligence, however, is preverbal, it is the intelligence of action. With the advent of language, thinking processes develop and knowledge accumulates fast.

By the time he enters first grade, the child has built up a structure of knowledge of the four great cornerstones of the physical world—space, time, matter, and causality. If asked to give an explanation of a phenomenon or to predict what may happen under certain circumstances, he is never at a loss for an answer. The only difficulty is that his answer is frequently wrong. He can tell you that the caterpillar develops into a butterfly, but he thinks that the caterpillar must die first, and furthermore that the caterpillar knows it. He thinks that the amount of liquid changes with a change in shape of a container; amount increases when it is poured from a flat, wide-mouthed container into one that is tall and thin.

The young child is frequently illogical because he makes judgments in terms of his perceptions, of how things look to him. The amount of liquid in the tall, thin container *looks* as if it were more, and the visual image is so overpowering that the child doesn't think straight about the problem. To think logically about the problem, the child must give up arriving at conclusions on the basis of sensory data alone. Rather, he must shuffle the data about in his mind, performing operations upon what he perceives. But up to about seven years of age, the child is in what Piaget calls the "preoperational stage" where he judges in terms of whatever factor or variable stands out. A ball made into a hot dog contains more "stuff," he believes, after the transformation. It is the length of the hot-dog-shaped object that is misleading; the child does not yet know how to coordinate the length of the object with its diameter.

Teachers in the first two grades can expect to find many children who are preoperational in their thinking. We can summarize the characteristics of thinking of pupils at this level as follows:

1. The child is perceptually oriented; he makes judgments in terms of how things *look* to him. He may, for example, be confused in thinking about space by the objects placed in that space. When given a problem where ten blue counters are laid in a row and he is asked to form a new row of red counters underneath the blue with exactly the same number of counters, the child can perform the task. But, then, if the blue counters are bunched together while the red are still spread out, the child will deny that there is still the same number. Even when he counts, he denies equality; the child does not see that there is a logical necessity by which ten must equal ten. Piaget has shown that this same type of perceptual judgment enters into the child's thinking about space, time, number, and causality. It is only as the child goes beyond his perceptions to perform displacements upon the data in his mind (for example, visualizing the second row of counters straightened out again) that conservation appears.

2. The child centers on one variable only, and usually it is the variable that stands out visually; he lacks the ability to coordinate variables. A kindergarten child is pouring juice into paper cups. The standard size cups run out, and the teacher substitutes some that are much higher but are also smaller in diameter. As the children drink their juice, several comment on the fact that Jimmy, Eddie, and Danny have more juice. And why? Because their cups are taller. The dimension of height stands out, not that of width, in this case. The child's thinking is rigid; he does not perform operations on what he sees. Later he will reason that "higher than" is compensated for by "skinnier than" and that both kinds of cups may hold the same amount of juice. This ability to see reciprocal changes in two sets of data is an important logical tool available to older children but not to the preoperational child.

3. The child has difficulty in realizing that an object can possess more than one property, and that multiplicative classifications are possible. It is hard for the child to see that one can live in Champaign and in Illinois at the same time; that a bird is also an animal; and that an Impala is also a Chevrolet. The operation of combining elements to form a whole and then seeing a part in relation to the whole has not as yet developed, and so hierarchical relationships cannot be mastered.

The Stage of Concrete Operations

The child's thinking processes continue to change as he assimilates information from fresh experiences and accommodates mental structures to the new information. Adults begin to observe the emergence of logical ways of thinking in the child at roughly about seven years of age. Gradually it becomes

possible for him to transform what he is perceiving by mentally manipulating the data. He performs mental operations upon data by putting two and two together, figuratively speaking, to arrive at a logical result; by making analogies between the present problem and others he knows; by making comparisons between a whole idea and its parts; by retracing his thinking and returning to the starting point. Present the child with the problem of the two rows of counters and the child will no longer be misled by the appearance of the long line of red. He'll say, "They're still the same because you haven't added anything or taken anything away," or he'll say, "You can put the blue ones back the way they were, so they've got to be the same." He has some mental operations available to him by means of which he can arrive at logical conclusions. These operations at this stage involve concrete data rather than abstract; mental activity is oriented toward concrete objects and events.

For Piaget, the cognitive actions of the child during the stage of concrete operations are really *systems* of action with definite structural properties. He uses a logico-mathematical model to describe these properties. They are four in number:

ADDITIVE COMPOSITION   It is possible for the child to think of a whole as being made up of the sum of its parts, and to put parts together to form a class. He can build a concept, for example, of animals as composed not just of mammals (his earlier, perceptual notion), but also of all living things other than plants, including insects, snakes, birds, and so on. He comes to see that Cleveland is in Ohio and that Ohio is but one of fifty states. He can form classes and superclasses in a hierarchical arrangement and see that the whole is greater than any one of the parts—that the set of animals is larger than the set of ducks, because ducks are animals.

REVERSIBILITY   A second property of logical thought is that it is reversible. In fact, every cognitive action can be reversed. The child can combine subclasses of animals into a supraclass and he can reverse the process, separating them into the original groups. If he is asked, "Suppose all the animals in the world were dead, would there be any birds left?," he can quickly put mammals, birds, insects, fishes, and so on, together to form the supraclass of animals (additive composition) and then reverse the combining process to see that all subclasses of animals would have to be dead if all animals were.

ASSOCIATIVITY   Thought is flexible at this stage of cognitive development; the child can put data together in various ways to solve a problem. Shown a long stick and a series of segments that add up to the same length, he is sure that the segments together will equal the long stick regardless of whether they are arranged in zigzag fashion. There are different ways of putting parts together or of thinking about the same problem, and a result obtained in two different ways remains the same in both cases.

IDENTITY   When comparing two classes of objects or events, the child can establish identity by making a one-to-one correspondence between the elements in each class. Suppose the teacher asks of his sixth-grade pupils, "Would you say that the bat is a bird?" To answer the question, pupils must think of the characteristics of bats and those of birds and then do a one-to-one correspondence between the two. If the elements can be said to be identical, and all the elements are used, then the two sets are identical. Whenever pupils are asked to compare or contrast, they make use of such an identity operation.

Note, however, that cognitive actions are really systems of action. In the example above, the child may first use additive composition, putting together the properties of birds to arrive at the concept of bird-ness. He does the same thing with the properties of the bat, before performing the identity operation. And he may reverse his thought at any one point, reminding himself of the question with which he started and checking to make sure he is still on the right track. Thought has a group-like structure, possessing the properties described above, and in the course of logical reasoning, thought in reference to a particular problem may have one or more of these properties.

The Stage of Formal Thought

The child's thinking during the stage of concrete operations *is* concrete; that is, he tends to solve problems with reference to the concrete problem at hand rather than abstractly. At about twelve years of age, the average child enters what Piaget calls the "stage of formal operations." Now he tends to do "propositional" thinking. When faced with a problem he can identify the variables and state them in terms of propositions, "It's got to be this or this, that's making the toy truck stand still on an inclined plane," he'll say, and then he will proceed to test each variable systematically, one at a time, holding the others constant. Often he will state the result abstractly, in terms of a generalization.

Suppose the pupil is studying the pendulum in sixth-grade science class. He is presented with a pendulum in the form of an object suspended from a string. He is asked to figure out what determines how frequently the pendulum will complete a full swing. The factors that vary are: the length of the string, the weight of the suspended object, and the strength of the initial push he gives the object. The pupil in the concrete stage thinks about the problem in terms of specific, concrete factors; he will say (erroneously), "This little weight goes more slowly because it isn't as heavy." The pupil in the stage of formal operations tends to think in abstract terms, "It's the length of string that makes it go faster or slower; the weight doesn't make any difference. *The shorter the string, the faster the swing.*" He is now coordinating variables and is able to state an inverse correspondence. That is, he is able to see that in some problem solving, as one variable increases in size, the other

decreases proportionally. Manipulating data so as to establish an inverse correspondence is a mental skill the pupil uses to solve many problems. The skill, along with others, becomes possible when the pupil can deal, not solely with the data, but with the combinations of data he makes in his mind.

What does this developmental picture mean for the teacher? What can he do to foster logical thinking in his pupils? Piaget lists four factors contributing to logical development:

1. *Maturation.* The modern view of the maturation process is that it can be affected by environmental variables. We used to regard maturation as a neural ripening, occurring regardless of experience. Today it is clear that stimulation is essential to the development of the nervous system; thus the ages at which a certain stage appears is not the same for all human beings. Maturation independent of experience cannot explain why logical development is advanced or retarded.

2. *Experience.* While experience is essential for concept development, alone it is not enough. A child may participate in an experiment or demonstration, but unless his mind is actively engaged in operating upon the data there will be no learning. As Piaget points out, knowledge is not drawn from the objects; it is acquired from actions effected upon objects.

3. *Social transmission.* The third factor that Piaget lists is that of social transmission. Passing on information to the child by speech or by texts is a fundamental factor, but again it is not enough. If the child *only* reads or listens, he may arrive at a false concept or, as Piaget puts it, deform the knowledge in some way. He must *operate* upon the information, mentally digesting it and changing previous mental structures.

4. *Equilibration.* This act of operating upon information involves equilibration, which for Piaget is the most fundamental of all the factors. Present the child with a situation producing a cognitive conflict; he will react in order to compensate for the disturbance and consequently tend toward equilibrium. The reactions take the form of the logical operations. Momentary incompatibilities are overcome by means of operations, making possible a higher level of equilibrium.

Teaching offers innumerable possibilities to foster the development of logical operations. Throughout this text and in the Problems and Projects, the reader will find examples of specific ways in which he can help pupils to become more logical in their thinking.

SOCIAL DEVELOPMENT

Psychologists now generally recognize that one area of child development cannot be properly understood without reference to other areas. This is clearly stated in the statement that follows:

Both the approach that treats each area of development separately and the approach that explains behavior always in terms of one area would seem to be faulty. A sounder approach to explaining behavior would be one which recognized the possibility of interrelationships among various areas of development and acknowledged that the interrelationships might shift from time to time.[15]

Social development is a phase of growing from immaturity toward maturity. Because the child must live in a "sea of human relationships," he must learn gradually to engage wisely and constructively in the activities of ever-enlarging groups of people. Although his life outside the school provides many opportunities for social learning, the school is perhaps the most effective social laboratory because it is possible to structure the school environment so that social development is more systematic.

The expression "social needs" refers to those needs which cannot be satisfied by any other means than membership in a group. These needs are as real as the need for food, exercise, and sleep. Moreover, they are closely associated with achievement in school subjects, as every parent knows who has observed what happens when a child is excluded by his peer group at school. Every child needs to gain acceptance by a group of children near his own age level; merely being with other children does not satisfy his need for belonging. He can achieve self-fulfillment within the group only as he is accepted and respected by other members of the group; only as he works with them toward the achievement of mutual goals; only as he makes useful contributions to group enterprises; and only as he learns that both initiative and conformity are essential to group life.

The teacher must understand the stage of social development of every child in order to work effectively with him. Although norms for social development have not been formulated to the extent that they have been in other areas of development, some valuable suggestions for observation are available. The Vineland Social Maturity Scale, for example, indicates what a normal child can be expected to do on his own at various ages from six to eighteen years of age.[16] Several books are available from which students can gain information concerning social characteristics of elementary school children.[17]

Because the general quality of the school curriculum and the quality of teacher–pupil relations are important factors in the social development of children, these factors are emphasized in Chapters 7 and 10 in this text.

[15] William E. Martin and Celia B. Stendler, *Child Behavior and Development* (rev. and enl. ed.; New York: Harcourt, Brace & World, Inc., 1959), p. 112.

[16] Edgar A. Doll, *The Vineland Social Maturity Scale* (Vineland, N.J.: The Training School, 1936).

[17] See Henry J. Otto, *Social Education in the Elementary School* (New York: Holt, Rinehart and Winston, Inc., 1956).

THE ROLE OF EMOTIONS IN LEARNING

A great deal has been written in recent years about the importance of a positive image of self. How the child feels about himself and others determines to a large extent how well he learns school subjects.[18] As Kelley has pointed out, "Subject matter and feeling are so closely intertwined that they can no longer be considered a duality. Everyone who learns something has some feeling about it, and so, as in so many other areas, they are inseparable." [19] The role of the emotions in the educative process has been discussed under many different titles: effective learning, personality development, and mental-health aspects of instructional practices.

Meeting the Basic Needs of Children

The mental-health emphasis in instructional practices is concerned primarily with understanding the basic personality needs of children and with helping to meet these needs. The following discussions of basic needs of children are by no means inclusive. Almost every reader will have a few items of his own to add to it. The points discussed here merely illustrate the needs approach to mental health.

BIOLOGICAL NEEDS   Biological factors of growth and development have important implications for the mental health of the child. As the child grows from infancy to adolescence, he is confronted with the need for adjusting to adult expectations in regard to eating, cleanliness, and muscular activity. He needs help in accepting the reality of his personal appearance, in developing muscular coordination, and in making an adequate adjustment to developing sex drives.

Most teachers are aware of the necessity for regular physical examinations of pupils, for cleanliness, light, heat, and play space. They are aware also of the importance of good nutrition, the need for a proper rhythm of rest and activity, the influence of good health on the child's ability to learn, and the effects of physical deformities on the personality. Biological factors that have implications for mental health but are not so well understood include differences among children in energy output, differences in body build, and differences in rates of physical growth.[20]

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[18] See especially Association for Supervision and Curriculum Development, *Perceiving—Behaving—Becoming* (Washington, D.C.: The Association, 1962).

[19] Earl C. Kelley, "The Place of Affective Learning," *Educational Leadership*, April 1965, pp. 455–457.

[20] For a more detailed discussion of the relation of biological factors to the problem of mental health see Bernice Neugarten, "Body Processes Help to Determine Behavior and Development," in Association for Supervision and Curriculum Development, *Fostering Mental Health in our Schools* (Washington, D.C.: The Association, 1950), Chapter 4.

The curriculum of the modern elementary school provides for meeting the biological needs of children through the program of physical education, through the program of health instruction, and through planning activities in the light of physical abilities of children at various age levels.

ACHIEVING STATUS IN CHANGING SOCIAL GROUPS   In the early years of his life the child is highly self-centered. The process of growing up involves identifying himself with peer groups, gaining group acceptance, and contributing to group enterprises. Before he starts going to school, the child's group is relatively stable, consisting of the members of his own family and a few nieghborhood playmates. When he begins his schooling, one of the most difficult tasks he faces is adjusting to a much larger group, a group consisting primarily of strangers. As he continues in the elementary school he is confronted with the need for adjusting to a shifting peer code of behavior, for resolving conflicts between the code of his parents and that of the peer group to which he belongs, and for adjusting more and more to adult standards of behavior.

The curriculum of the elementary school is the instrumentality through which the child grows into our democratic culture. The elementary school is both a product of the culture and the workshop in which the growing child learns the ways of democratic living. In the better elementary schools, education is recognized as a social process and the curriculum is developed in terms of the social needs of growing children.

The child is not to be regarded as a *candidate* for membership in the culture; he already is a member and is entitled to his share of the happiness that comes from participation in the life of the group. Teachers must recognize their responsibility for helping children acquire the social skills needed for getting along with others and for becoming effective group members. These skills, like others, are learned through meaningful experiences. The practice of democratic skills in the classroom provides the basis for effective citizenship in the wider groups of the community, state, and nation.

But care must be taken that social skills are not learned at the expense of individualism. One of the criticisms of modern schools is that they concern themselves too much with group adjustment, and provide no antidote to the pressures for conformity in our society. Sometimes this is done unwittingly in classrooms where children have too many opportunities to criticize one another's reports, pictures, and performances. For example, a child gives an oral report and then must wait for comments from the class. The class has been taught that they must be polite and considerate, so the first critic prefaces his remarks with, "That was a good report, Jimmy, but——," and then lets fly with the criticism. Some children learn from experiences such as these that the way to avoid caustic comment is to confine oneself to a rather narrow range of behaviors, that it is dangerous to be different (that is, original and creative), and that it is safer to go along with what the group

thinks is acceptable. Occasionally, parents report that their child has refused to include an interesting object or piece of information in his report because "The other kids won't like it," "The other kids will think it's funny if I bring in extra things," or "We didn't vote to do that." If criticism is needed, the teacher should give it in a kindly, constructive way. When the group is used continually to approve or disapprove the actions of other children, too much concern for group opinion may develop and overconformity may result. Group work must be planned so that the individual is not lost in the group.

Too many group projects also kill individualism. It is true that children learn social skills by practicing them, but group projects should be limited to such activities as plays and necessary committee work, which, because of their nature, call for this kind of activity. Designing a map, constructing a story, working on an experiment may occasionally be done with no loss to creativity by two or three close friends who stimulate one another intellectually, but too often in a group project the incentive to be creative is killed. Furthermore, since everyone in the group, even the slacker, will receive the same credit for the job, there is little incentive to put forth one'e best effort and a desirable achievement drive may be weakened.

GROWING GRADUALLY FROM DEPENDENCE TO INDEPENDENCE   Perhaps the most significant single change in the behavior pattern of the individual as he matures is the growth and transition from excessive dependence upon adults to independence. Parents and teachers who are sensitive to the biological and academic needs of children frequently overlook almost completely their social needs. The child needs considerable adult guidance in learning to bridge the gap between dependence upon others, which is characteristic of young children, and independence, which is expected more and more as the child grows up. One cannot develop self-direction in children merely by "taking the lid off" and leaving them to do as they please.

The process of growing up, of becoming increasingly independent of adult control, is a long and gradual one; it requires years of growing, experimenting, and guidance. For the five-year-old it is a matter primarily of learning to make decisions, under wise adult guidance, concerning immediate problems, such as sharing possessions, observing safety rules, and taking responsibility for caring for toys and articles of clothing. As the child grows older, he is expected to develop increasing ability to do long-range planning.

Teaching that takes into account the child's need for becoming increasingly independent and self-directing provides experiences in identifying problems, planning to solve problems, gathering information, making decisions, acting upon decisions, and evaluating outcomes. The function of the teacher in this process is that of a guide and a resource person. As the child grows in his ability to make decisions, the direction of the teacher is gradually decreased. The teacher always provides enough guidance to give pupils a sense of security but not enough to discourage initiative.

SECURITY AND SATISFACTION   Many children lack security in life outside the school. The increasing number of broken homes and the tendency of families to move from one place to another result in a large number of children who have nothing that can give them a feeling of security. The school has a particular responsibility to children from such families. The child needs to feel that he is surrounded by adults upon whom he can depend, that he has a reasonable chance to succeed at least a part of the time, and that he can predict fairly well what will be expected of him.

One of the fundamental human needs is a feeling of confidence in oneself, a recognition of personal worth, and a knowledge that one is recognized by others as a worthwhile person. Children who grow up without the opportunity to develop self-confidence, who are continually criticized for inability to meet adult standards, who are not allowed to develop skills in line with their abilities and special talents, lose confidence in themselves and soon develop antisocial behavior traits. Negativism, attention-getting devices, and bullying are frequently the result of failure to find ways of obtaining security and satisfaction through acceptable types of behavior. The adult who is boastful, who is always promoting himself, is usually one who lacks personal security and therefore feels that he must call attention to his own abilities and achievements or they will go unnoticed by others.

The need for security and satisfaction is met in modern elementary schools through helping each child develop efficiency in the use of such important skills as reading, writing, using numbers, and speaking in accordance with his abilities; through discovering special needs and interests; through providing opportunities for the development of social skills in group situations; through supplying understanding and assistance to atypical children; through using praise and criticism discriminatingly; and through developing a classroom environment for happy, cooperative living.

GETTING AND GIVING AFFECTION   Children need to grow up in home and school in an environment of sincere affection. They need to be loved and appreciated by those who are most important to them. Overdoses of affection, overprotection, and a possessive parental attitude are hazards to the mental health of children, but every child needs at least one adult who has an interest in him, who understands his problems, who loves him, not because he is good or beautiful or bright but because he is himself. As the child grows up, he also needs to learn to give affection, to form friendships, and later to build a strong bond of affection with a possible marriage partner.

The elementary school should be staffed with teachers who understand the need that children have for getting and giving affection, who are genuinely fond of children, and who can accept every child emotionally not only for what he is but for what he may become under wise guidance.

DEVELOPING APPROPRIATE COMMUNICATION SKILLS   The needs of children cannot be understood apart from the environment in which they grow

up. Success and recognition in school still depend upon the development of skills and concepts in reading, listening, oral expression, and written expression. If the child fails to make satisfactory progress in these skills, social and emotional maladjustments soon follow. The relationship of these skills to the mental health of the school child is discussed in detail in Chapter 8. Here it is sufficient to point out that emphasis on the mental health of a child is as integral a part of instructional practices in the language arts as it is in all areas of the curriculum. Failure to understand normal growth patterns of children and failure to develop language-arts programs in terms of developmental tasks have caused language to become a hazard to the mental health of children rather than a means to their wholesome development.

LEARNING TO FACE REALITY   Children need to learn to face reality, to understand their own strengths and weaknesses, to build on their innate strengths, and to accept situations that cannot be changed. The well-adjusted person is not the one who always succeeds at everything but the one who is content to see others excel in some things while he excels in others. One of the leading causes of frustration and nervous tension in adults as well as children is failure to adjust one's aspirations to one's talents. The child who is upset whenever the least thing goes wrong, who cannot bear to see others succeed where he has failed, is as much in need of guidance as the child who is having difficulty in learning to add or subtract.

One phase of growing up is learning to face reality. The program of the modern elementary school provides many opportunities for the teacher and the pupil to work together in learning to face reality, to understand and accept the facts of different abilities, different physical features, and different achievements. It provides opportunities to learn that failure in little things provides an opportunity to learn from mistakes and to correct errors.

The work of the teacher is frequently hindered by parents who have ambitions for the child that do not correspond to his abilities or interests. This situation points up the need for a closer working relationship between teachers and parents in helping the child to learn to face reality. Parents and teachers need to understand that they must work in harmony with each child's developmental needs rather than formulate a plan for the child and then try to force the child to conform to their wishes. An acceptance of the democratic philosophy of education will result in the practice of helping each child to develop his own unique potentialities rather than the practice of expecting each child to measure up to some arbitrary standard.

Principals and teachers can examine the practices in their schools in the light of the basic personality needs of children by using the following questions as guides:

1. Does the school program take into consideration the biological, social, emotional, and intellectual needs of pupils?

2. Are teachers and principals patient and tolerant with pupils who are having difficulty in adjusting to adult standards of behavior?

3. Do school policies make it possible for all children, despite differences in abilities, to meet their needs?

4. Do teachers help each child to set goals in terms of his abilities?

5. Are parents encouraged and helped to face reality in regard to expectations they have for their children?

6. Are failures of children in school subjects studied to find out the causes and are efforts made to prevent wholesale failure by adjusting the work to developmental needs?

7. Are adequate opportunities provided for exceptional children to succeed to the extent of their abilities?

8. Are opportunities provided for children to learn to work as members of a group and to learn to become increasingly self-directing?

9. Do teachers look upon skills in communication, use of numbers, and other areas as a means of helping each child to meet his developmental needs rather than as ends in themselves?

10. Does the social climate of the school encourage children to discuss freely their problems and needs with teachers?

As trustees of the cultural heritage, it is natural for teachers to attempt to make children conform, as far as possible, to the standards accepted by the culture. But often a lack of understanding of the growth patterns of children causes our demands to bear too heavily upon the child before he is ready for it. To help the child learn gradually to conform to the world as it is and at the same time take into consideration the relentless urges of his own nature is no easy task. If we can learn to be less rigid in our demands, if we can take more of our cues from the child himself as he pursues his developmental course, if we can urge conformity upon him at times when he is ready to accept, we shall be collaborating with the demands of his growth pattern, and his adjustment will be accomplished with less friction and more satisfaction. That is why it is important for teachers and parents to know something about the facts of human growth and development.

PRINCIPLES OF LEARNING

A wide gap exists between current knowledge of the nature of the learning process and actual practice in most elementary school classrooms. Principles of learning that have been accepted for decades are still often violated in many classrooms. The principles of learning that will be discussed here are among those commonly disregarded.

Relationship to Pupil Purposes

The activities in which children engage in classrooms take on unity and meaning when they are closely related to purposes that are real to children. Such activities call forth greater effort on the part of pupils and foster the development of initiative, originality, and self-direction—qualities that are recognized as essential in a democratic society.

Pupil purposes serve the functions of organizing, vitalizing, and relating the activities in which children engage. It is the responsibility of the teacher, therefore, to utilize purposes that children already have and to reveal to them purposes they can understand and accept. This does not mean that the teacher is helpless when confronted with a group of children who do not have clearly defined purposes. She can create situations that cause children to realize the need for certain abilities. Such a situation exists, for example, in a unit of work when a child wants to paint an object a certain color. Instead of beginning with a lesson on the blending of color, the teacher helps the child experiment with the blending of various colors in response to his need for a certain color.

It is a misconception of modern education to assume that pupil purposes constitute both the means and ends of education. Many things must be learned simply because of the demands of living in the world as it is. In addition to utilizing purposes that children already have, the teacher has the responsibility of helping pupils develop worthwhile purposes. Pupil purposes must come from somewhere, and since the teacher has a broader background of experience, she has the same obligation to make suggestions for worthwhile undertakings that the master carpenter has for making suggestions to the apprentice. Pupil purposes are the means rather than the ends of education. They cannot tell us where we should go; they can only help us to get there.

The Continuity of Growth and Learning

Children have been growing and learning for several years before they enter school. Teachers are giving more attention to what the child already knows when he enters school and are making greater efforts to relate school learning to what has already taken place. After the child enters school, he continues to learn during the hours he spends out of school. More consideration is being given to what children learn from out-of-school experiences, and school experiences are being related more closely to what is learned out of school. The problem of providing continuity in the learning experiences of children will be treated in detail in Chapter 5.

more on learning from books and less and less on learning through participation in real-life experiences. Someone once said, "A curse came upon learning with the invention of printing."

There has been a trend in recent years to introduce more of this "home" type of learning into the school program. By the use of audio-visual resources, excursions, school gardens, care of pets in school, school clubs, and various types of problem-solving activities, modern elementary schools are bringing more real-life activities into the curriculum.

SUMMARY

1. There is evidence that the more effective teachers are those who know most about the pupils whom they teach.

2. The teacher is not merely a person who imparts information; the teacher is a builder of human lives and a trustee of the cultural heritage.

3. The task of the teacher is as technical and difficult as that of any other professional person.

4. Learning, in the broader sense, involves the modification of behavior; it is an organismic rather than a mechanistic process.

5. Growth is a process that cannot be altered very much by environmental factors; learning is the changes in the behavior of the individual brought about primarily by interaction with the environment; and development refers to changes that result from the combined influence of growth and learning.

6. Early childhood is the crucial period in the intellectual development of individuals.

7. The school has a responsibility for helping children learn to think critically.

8. The structure of knowledge is an important factor in learning school subjects.

9. Curriculum design is an important factor in effective learning.

10. The development of concepts involves a higher level of learning than the acquisition of specific facts.

11. The social development of the child has a close relationship to his intellectual development.

12. How a child feels about himself and others determines to a large extent how well he learns school subjects.

13. The basic needs of children are (1) biological, (2) status in the group, (3) growth toward independence, (4) security and satisfaction, (5) getting and giving affection, (6) skills used in communication, and (7) learning to face reality.

14. Curriculum improvement depends upon the application of modern principles of learning to classroom procedures.

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SELECTED FILMS

Developing Responsibility. A one-reel sound film. How a boy carries out responsibilities at home and at school. Stresses good planning and consistent effort. (Coronet Films)

Developing Self-reliance. A one-reel sound film. A boy, accustomed to depending on others, develops self-reliance by assuming responsibility, being informed, recognizing goals, and making decisions. Stresses the difference between dependence and seeking advice and needed help. (Coronet Films)

Individual Differences. A two-reel sound film. Shows how a teacher can provide for individual differences, the effects of a standardized type of teaching on a shy, slow, deliberate learner, and how understanding and individualized treatment is needed. (Coronet Films)

Learning and Growth. A one-reel sound film. Arnold Gesell explains relationships between learning and growth; presents some suggestions for directing learning activities. (Encyclopaedia Britannica Films)

Learning to Understand Children. A sound film in two parts, each part is two reels in length. (McGraw-Hill, Inc.)

Part I: A Diagnostic Approach. A case study of an emotionally and socially maladjusted girl of fifteen; the teacher observes her behavior, studies her previous record, visits her home, and conducts an interview in order to understand her better and be able to help her.

Part II: Remedial Program. The teacher uses the girl's interest in art to help her gain self-confidence and acceptance by her classmates.

Willie and the Mouse. A one-reel sound film. Shows how experiments with laboratory mice have implications for classroom practice; shows the effect of continuous failure on behavior: contrasts and traditional classroom with the modern classroom. (Teaching Films Custodians)
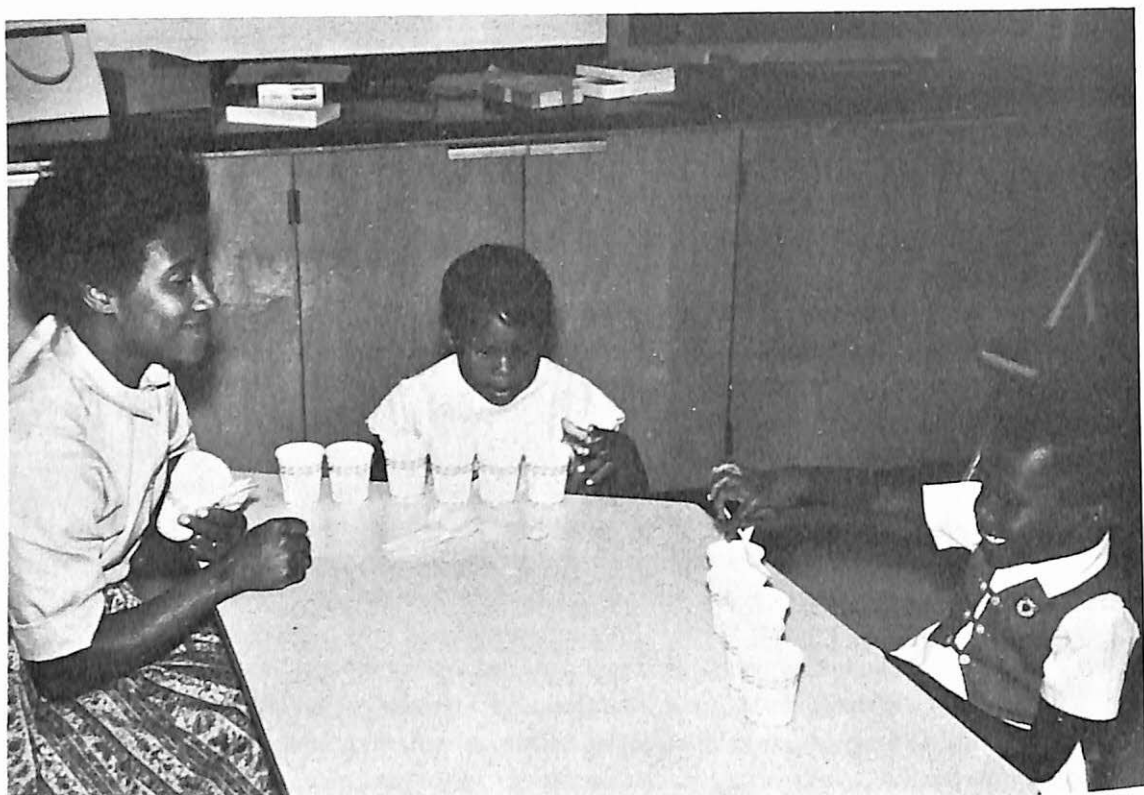
Photo Comment

DEVELOPING ONE-TO-ONE CORRESPONDENCE

Some years ago, Bruner wrote that "any subject can be taught effectively in some intellectually honest form to any child at any stage of development." The statement is true only if all the qualifications are stated, and, for Piaget, one of the qualifications would be the prior existence of those mental structures essential for the acquisition of the knowledge in question. Thus, it would be difficult for a seventh-grade student to apply the inverse square law to light in any meaningful way unless he could first deal with the concepts of direct and indirect proportion. For Piaget, complex structures have their foundation in simpler ones, growing out of the actions of combining, taking apart, ordering and one-to-one correspondence.

One-to-one correspondence is basic to many concepts. It is basic in classification, for example. Before the learner can classify a duck as a bird, he must know the essential characteristics of bird-ness, and then do a one-to-one correspondence between characteristics of the duck and essentials of bird-ness to see if the duck meets all the qualifications.

The concept of a cardinal number also depends upon one-to-one correspondence. Young children are not always aware of the fact that ten always equals ten; a row of ten cups stretched out in a longer row than ten spoons contains more cups, they will say, than the row of spoons. Ten only equals ten when the child has performed enough actions involving one-to-one correspondence, taking out of a pile of spoons, as is shown in one picture here, one spoon for every cup. This skill that is basic to logical thinking must be developed in kindergarten or first grade. Ingenious teachers can find many opportunities to involve children in one-to-one correspondence—from counting out school supplies to playground games. From time to time, individual children can be tested with a task like the cup-spoon one described. Those who lose the notion of correspondence once physical proximity is altered should engage in additional practice with the teacher. Equipment can be anything—the candies pictured in the bottom photo, checkers, miniature toys, and so on.

Complex cognitive structures have their foundation in simpler ones.

"Will it balance if I put this in here?"

"Why does one block balance two blocks?"

Photo Comment

THE CONCEPT OF THE BALANCE

As children of different ages experiment with a two-pan balance, it is possible to discover, as Piaget and Inhelder have done, how thinking processes change. An understanding of the principle of the balance is dependent upon an understanding of proportionality: that $W/W^1 = L^1/L$. The schema of proportionality is a complex mental structure that typically emerges in adolescence as students become capable of formal reasoning. Its development, however, has its roots in simpler structures emerging in preschool years. The emergence of these structures can be traced to the preoperational stage.

The child in the preoperational stage does not know how to equalize weights on either side of the balance in a systematic way. Some children raise and lower the arms several times in the vain hope that the arms will maintain themselves in the position in which the child places them. Some will suspend one weight on each side for symmetry, but then keep adding additional weights to one side as if several weights would improve the situation. However, the child does have the notion at this stage that there must be weights on both sides to balance and that adding and subtracting weights changes the balance, although he cannot yet regulate his additions and subtractions accurately.

At the stage of concrete operations, both weight and distance are recognized and regulated systematically. The child discovers by trial and error that equilibrium is possible between a smaller weight at a greater distance and a greater weight at a smaller distance. But he can not generalize to all cases; he can only work out a solution in concrete terms.

When the same task is presented to a student capable of formal reasoning, a different pattern of thinking is revealed. As one boy put it, "You need more force to raise weights placed at the extremes than when it's closer to the center, because it has to cover a greater distance." Then the boy went on to state how weight and distance on one side are quantitatively related to weight and distance on the other. While younger children regulate the balance by addition and subtraction, older children can work out weight–distance relationships.

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Problems and Projects

1. One of the best ways to gain insight into the thinking of children is to administer some of the Piaget tests. Given here are directions for one of the tests, requiring little in the way of equipment. Let different members of the class give the test to first- third-, and fifth-grade children. Compare results with the analysis included below. The analysis is based upon a sample of Swiss children in Geneva. Do you find similarities in the thinking of American children?

CONSERVATION OF MATTER

Material

Two balls of clay (different colors).

Presentation

"Here are two balls of clay. I would like to have the same amount of clay in this one as in that one."

Before going on to the experiment be sure the child agrees that both balls are equal; for example, "Do both balls have the same amount of clay? If you eat this one and I that one, do you eat as much as I do?" (This formulation should be used whenever the child has difficulties understanding the questions.)

Part I:

Take one of the clay balls and shape it into a hot dog about five inches long.

"Is there more here (ball) or more in the 'hot dog,' or is there as much in both?"

Justification: "How do you know? Why?," and so forth.

Remodel the hot dog into a ball; if necessary remove clay until the two balls are again considered equal by the child.

Part II

Take one of the balls and shape it into a "pie" three inches in diameter.

"Do you think there is as much clay in the ball as there is in the pie, or is there more clay in the ball, or is there more in the 'pie?' "

Justification: "How do you know? Why?," and so forth.

Remodel the pie into a ball. "Do both of the balls have the same amount of clay, or does one have more than the other?" If necessary, remove clay until the two balls are again considered equal by the child.

Part III

Break one of the balls into about a dozen pieces (pellets). "Is there as much clay in the ball as in all these pieces of clay together, or is there more in the ball or more in the pieces?"

Justification: "How do you know? Why?," and so forth.

TEST ANALYSIS

Stage I: Perceptual Judgment (Preoperational)

The child responds in terms of one variable only. He usually affirms that there is more clay in the hot dog "because it is longer," although a few children will maintain that the ball of clay has more stuff in it "because it is thicker."

Stage II: Concrete Operations

Substage A: Transition period. The child recognizes that the hot dog and the ball have the same amount of clay as before; he may give as a reason, "You didn't add anything and you didn't take anything away," or, "You could put the hot dog back and it'd be the same." However, when the appearance of one ball is sufficiently changed (that is, as in the pie or the pellets), the child will lose the conservation principle and say the amount of clay in each is no longer the same. Furthermore, he may also retract his earlier statement of equality.

Substage B: Instantaneous and unshakable recognition of equality. At this substage, the child will not only assert equality but will often treat as absurd questions that suggest any other possibility; he may respond in terms of operations: "Just put all the little pieces together and it's the same as the ball"; "Make a pie out of the other ball to prove it"; "Roll the hot dog back into a ball and it's the same"; "The hot dog is longer, but the ball is thicker."

2. The discovery method has been widely advocated as a teaching tool; its proponents have argued that knowledge acquired through discovery has a potency and permanency that copy responses learned by reinforcement do not have. That is, the pupil who discovers through his own activity that air exerts pressure is more likely to find applications of and remember the generalization than a pupil who has simply read about or been told the generalization.

Discovery might be considered the equivalent of Piaget's concept of equilibration. For Piaget, knowledge is acquired when relevant cues are assimilated and disturb previously held notions, with the result that accommodation to the new information occurs.

Suppose you wanted to teach pupils in a science class studying the human body that there is a relationhip between structure and function of bones in the body; that the size, shape, and strength of a bone and the job the bone does are interrelated. How would you teach the concept by the use of copy responses? How would you teach it by using the discovery method? Plan the step-by-step presentation of a lesson to illustrate each method. Consult your own notes from biology courses and science texts written for children. Specify the grade level for your lesson.

3. A first-grade teacher of culturally disadvantaged children is trying to teach color names to Harry. She knows that Harry sees a difference between yellow and blue; the child is not color blind. But Harry is just as likely to call yellow, red, and blue, green. It occurs to the teacher that what Harry needs to discover is the concept of color. Harry must realize that the difference in visual stimulation he is sensing is a difference called "color," and that each visual stimulus has a different color name. The discovery might be likened to Helen Keller's discovery, as water gushed over one hand while the word was being spelled out in the other, that there is a word for everything in the universe.

Cases similar to Harry's where the learner appears to resist stubbornly what the teacher wants to teach can be helped if the teacher can diagnose the learning difficulty and take steps to correct it. Write out a plan for helping Harry discover the concept of color, taking into account the four steps in learning described in the chapter.

4. Educators have long recognized that affective or emotional needs of children can affect school learning. When such needs as anxiety, dependency, achievement, and aggression are strong, they affect self-concept, and so exert an influence upon what and how the pupil learns. Teachers must learn to recognize and deal with these needs to make their teaching more effective.

Suppose you were teaching kindergarten in an integrated school. One of the Negro girls is concerned with color differences. She repeatedly makes remarks or asks questions that indicate awareness of color differences and some anxiety over them. Several times she has asked the teacher, "What color is your skin? What color is mine?" In playing house she rejects the Negro doll and demands a white one.

What should the teacher do in such a case? Should she ignore the problem and simply give factual answers to the child? If she goes farther, what should she say? Is the problem one that concerns the whole class as well as this one child? Should the problem be discussed with parents, and, if so, what would the teacher say?

For an illuminating case study of a member of a minority group, read "Frankie, Case Study 2," in P. Sears and V. Sherman, In Pursuit of Self-esteem: Case Studies of Eight Elementary School Children (Belmont, Calif.: Wadsworth Publishing Co., Inc., 1964).

Contemporary Society: Background for the Curriculum

3

Today's society is so complex that it is difficult not
to be overcome by the responsibility for
understanding it—particularly, understanding it to
the point of being able to interpret its needs
correctly and to plan educational programs
appropriate to those needs.
—Dorothy Neubauer (Ed.), *Contemporary Society:*
Background for the Instructional Program
(Washington, D.C.: National Education
Association, 1957), p. 7.

The preceding chapter emphasized the importance of understanding the learning process and the place of child study in curriculum planning. But the needs of children can be fully understood only as they are studied in relation to the conditions and values of the society in which children grow up. The classroom teacher, the administrator, the supervisor, the curriculum director —indeed anyone who has responsibility for influencing the curriculum—must be a student of the ever-changing American society; he must look for clues in its conditions, trends, practices, and aspirations. This chapter deals with social realities; the next chapter deals with goals and aspirations.

THE IMPORTANCE OF SOCIAL ANALYSIS

If the school program is to be effective in releasing human potentials and in improving living, it must be related to time, place, and circumstances. There is little to be gained from wishing that circumstances were different or longing for a return to the "good old days." The broad outlines of an elementary school curriculum suited to the demands of the last half of the twentieth

century will be determined to a large extent by the stern realities of the age in which we live. Many of our difficulties, in education as well as in government, stem from our failure to understand the kind of world in which we are living.

When technology produced a hundred million automobiles, we were slow to realize that this called for better highways and highway patrols; when it produced tens of millions of radios and television sets, we reluctantly established an agency to sort the waves and to police the air; when it revolutionized farming and farm families moved to the cities, we moved very slowly to widen streets, build schools, expand the water supply, increase sewage disposal services, and modernize fire departments and police departments. In short, people were slow to realize that you cannot release a forty-fold increase in energy per capita into the social organism without a corresponding increase in governmental services and in educational opportunities. As Stuart Chase commented, "Technology was dictating to the State. The State had no choice but to obey, whatever the philosophies of its agents." [1]

The idea that social trends influence the basic tasks of the school has been receiving increasing acceptance during the last three decades. President Hoover's Committee on Social Trends pointed out that the school was the center of both "hope and concern." Koopman stated in 1940, "Every teacher should gain proficiency in surveying and analyzing the natural and cultural landscapes, with particular reference to community processes, and in utilizing the data in developing an improved educational program." [2] Smith and others said, in 1950, "Persons who have given serious attention to the problems of curriculum development now agree that curriculum principles and procedures should be grounded in social reality." [3]

SIGNIFICANT TRENDS IN OUR SOCIETY

Many of the children now enrolled in elementary schools will live several decades in the twenty-first century. This means that teachers who are now working in the schools as well as students who are preparing to teach must become students of significant trends in our society. Fortunately, much is being written that will help them become better informed. [4] The anthropologist, the sociologist, the political scientist, and specialists in other disciplines can supply information that will help shape an effective educational program.

[1] Stuart Chase, *The Economy of Abundance* (New York: The Macmillan Company, 1934), p. 250.
[2] G. Robert Koopman, *Teachers for Democracy* (New York: Appleton-Century-Crofts, 1940), p. 92.
[3] B. Othanel Smith, William O. Stanley, and J. Harlan Shores, *Fundamentals of Curriculum Development* (New York: Harcourt, Brace & World, Inc., 1950), p. 3.
[4] See Dorothy Neubauer (Ed.), *Contemporary Society: Background for the Instructional Program* (Washington, D.C.: National Education Association, 1957).

It is not presumed that this chapter can give the student a comprehensive picture of our complex society; it can merely focus attention on some of the significant trends.

Our Rapidly Changing Society

The most outstanding characteristic of the age in which we live is rapid change. More changes take place now in the span of a few years than our grandfathers saw in the course of a lifetime. Science, translated into invention and technology, has brought about changes at a constantly accelerated rate. It has transformed the pattern of living for individuals, modified the functions of the home, erased old community boundaries, increased the functions of government, and modified recreation and leisure-time activities. We live in the midst of vast technological revolutions which render obsolete the structure and operations of many of our social institutions and raise the need for the application of human intelligence to the solution of problems of living as never before in the history of our nation. Modern man is indeed obsolete unless he can adapt his social, economic, political, and educational agencies to the demands of a new age.[5]

Man has not yet learned to live with the automobile, much less the airplane and the rocket; there is ample evidence of this in the congested traffic on our streets and highways and in the alarming increase in deaths caused by automobile accidents. Educators were asking, in 1942, "Are we, the last generation of the earthbound, able to teach the first generation with wings?" [6] Twenty-one years later, their problem had become much more complicated by spectacular changes.

> A man 50 years old today was born in what was virtually the horse-and-buggy age, yet he may live to see the beginning of interplanetary travel and the day when machines will be able to do a creditable job of thinking. He has watched the development of the automobile and the airplane, observed the growth of radio and remote control, seen electricity replace steam; now he sees atomic energy begin to replace electricity.[7]

Educators today must be concerned with the facts that (1) opportunities for employment in professional and technical jobs are increasing rapidly while opportunities for employment as unskilled workers are declining, (2) opportunities for employment increase with the number of years of schooling, and (3) we must develop the flexibility that will enable the individual to learn a new occupation when the one for which he was prepared no longer exists. Pupils

[5] See Norman Cousins, *Modern Man is Obsolete* (New York: The Viking Press, Inc., 1946).

[6] Alexander J. Stoddard, *The Role of the School in the Present Emergency* (Washington, D.C.: National Education Association, 1942), pp. 38–45.

[7] Project on the Instructional Program in the Public Schools, *Education in a Changing Society* (Washington, D.C.: National Education Association, 1963), p. 14.

must be taught to think for themselves and to develop solutions to problems rather than merely to memorize answers; curriculum making must be a continuous process in order to keep pace with rapidly changing conditions; and a more intimate relationship must exist between what is taught in school and what is happening in the society. In short, education for social change must be recognized as a necessity.[8]

Our Interdependent Society

Science and technology have provided a higher standard of living for modern man, but they have also increased the complexity of living. He is required to interact almost constantly with others so that his services are available at the right times and places and so that he in turn can benefit from the services of others. The complacency of living on a continent separated from the rest of the world by two great oceans has been shattered by man's conquest of distance. It took Magellan's men three years to circumnavigate the globe; astronauts have made the trip in approximately ninety minutes. It took our forefathers sixty-six days to cross the Atlantic in the Mayflower; it took Lindbergh thirty-three hours and thirty-two minutes to fly his plane across it in 1927; by 1960, it took about six hours to fly across it; and by 1970 a plane can probably fly across it in two hours.

We have become so accustomed to the benefits that come from science and technology, from specialization, from the division of labor, and from the exchange of goods and services that we are inclined to overlook the fact that such interdependence requires more understanding and skill in the area of human relations than was necessary under the old system. When public schools were first developed in this country, most people lived on farms or in small villages where each family had its own cows, raised its own food, provided its own fuel, had its own water supply, and put out its own fires. Life was an individualistic, every-fellow-for-himself game, and there was little need for cooperation or skill in human relations beyond the range of the family.

Today, most people live in urban centers, and the water supply, fuel, fire protection, sanitation, police protection, and recreational facilities are necessarily cooperative enterprises. Communities depend upon other communities, states upon other states, and nations upon other nations for goods and services. The welfare of the individual citizen is determined to a greater extent than ever before by what is happening in Washington, in London, in Moscow, and in other places throughout the world. Isolationism is as outmoded for the individual as it is for the nation. The schools have always had the responsibility for helping to develop intelligent citizens of our country; they must now help to develop intelligent citizens of the world. In his last address, which

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[8] See Association for Supervision and Curriculum Development, "Education and Social Change," *Educational Leadership*, March 1957.

he wrote but did not live to deliver, Franklin D. Roosevelt said, "We are faced with the pre-eminent fact that if civilization is to survive, we must cultivate the science of human relationships—the ability of people of all kinds to live together and work together in the same world, at peace."

Curriculum planning in many elementary schools takes into account the interdependence of contemporary life. Children learn to participate as members of the group in planning and carrying out projects and units of work. They perceive how people in the community cooperate to meet common needs, such as education, fire protection, health and recreation; they learn how people living in various parts of the world depend upon other people for the goods and services they need. Chapter 10 will explain how the staff of the elementary school can plan to meet the needs of children who are growing up in an interdependent society; how the social studies program can contribute to intercultural understanding, a better understanding of the local community, and more effective participation in group enterprises.

Interdependence does not mean that the individual must become completely submerged by the group, that he must lose his individuality, or that he must always conform to the wishes of others. Every normal human being brings his own concept of self, his own set of values, and his own purposes to bear on the situations he meets. Group life provides the milieu in which human personality develops, but it is only one of many factors that determine what the individual becomes.

The Family in Transition

The family and the school are this country's major institutions for educating the young. The family is the first socializing influence in the child's life. It is from his mother that the child first learns about living with other people, then from his father, then from his brothers and sisters, then from other relatives, and then from a widening circle of people with whom he lives. Although changes in American life have tended to limit the educational opportunities provided by the home, it is still a major factor in determining what the child will become as an adolescent and later as an adult.

Anthropologists from other countries, who have studied the American people, have been impressed with the great prestige of mothers in our society. They call the United States *motherland*; they say that in this country a man's conscience may be defined as what he thinks his mother would want him to do. Psychiatrists have provided a great deal of evidence that adequately mothered infants have been relatively free from emotional and physiological upsets, while inadequately mothered infants have reacted by excessive crying and by physiological upsets. Studies of orphanage children have provided some evidence that, even with the best of physical care but with no opportunity to relate themselves to anyone who could give them affection, they displayed throughout adolescence aggressive behavior, were unable to form genuine

attachments to people, were deficient in language usage, and had difficulty in developing concepts.[9]

Changes in the American family that have tended to reduce its functions as an educative agency have been too well documented elsewhere to require detailed treatment here.[10] During the nineteenth century, the family was a self-contained unit for economic production. The father, the mother, and the children worked together to produce food, clothing, shelter, and other economic goods and services. The urban family of today is an economic unit for consumption, but not for production. Recreation, which formerly centered around the home, has been taken over by the movies, sports, and other forms of commercialized recreation. The girl once learned social skills at her mother's knee; she now learns them in the nursery school, the kindergarten, the Girl Scouts, and from other nonfamily agencies. The boy once received preparation for his life of work by working with his father; he now receives it from a trade school or a professional school. The stability of the family has been reduced by the continuing increase in divorce; divorce rates have increased by 3 percent each year since the Civil War. The increasing proportion of mothers who are gainfully employed, the greater mobility of population, urbanization, the decrease in the proportion of one-family houses, and other factors, have tended to lessen the educational opportunities offered children in the home.

The school was established, in this country, not to provide an education in the sense that we use the term today, but to add a little book learning to the education that the child was getting in the home. Changes in American life have caused many of the educational functions of the home to be transferred to the school. The modern school is still expected to teach the conventional subjects; it is expected also to develop stable personalities, foster physical and mental health, prepare for home and family living, develop economic competence, teach citizenship, and contribute to world understanding.

There are those who propose a very simple solution to the problem of an overloaded school curriculum; they would allocate certain functions to the school, others to the home, and still others to various community agencies. Aside from the very practical problem of finding an individual or group with the authority to make such an allocation of functions, the proposal overlooks the fact that children are not divisible. Suppose, for example, that all responsibility for the health of the child would be allocated to the home and the family physician. It is easy to see that living conditions and procedures used in the school would continue to influence the health of the child. The home,

[9] See Louis Kaplan, *Mental Health and Human Relations in Education* (New York: Harper & Row, Publishers, 1959), pp. 105–134.
[10] See William O. Stanley, and others, *Social Foundations of Education* (New York: Holt, Rinehart and Winston, Inc., 1956), pp. 102–110; and Robert J. Havighurst and Bernice L. Neugarten, *Society and Education* (second ed.; Boston: Allyn and Bacon, Inc., 1962), Chapter 4.

the school, and the community must work in close harmony if the needs of the child are to be met in the area of health as well as in other important areas.

Elementary schools alone cannot provide adequate educational opportunities for children; it takes the home, the school, and the community. In many elementary schools, parents take part in study groups, share information with teachers about the characteristics and needs of children, make teachers feel at home in the community, and try to provide better living conditions for children in homes and in the community. The elementary school supplements the work of parents in providing the best opportunities possible for children to learn and grow. Good elementary schools provide guidance services, home visitors, nursery schools and kindergartens, parent–teacher conferences, special classes for exceptional children, and in many other ways try to adapt the school program to educational needs arising from the changed status of the home.

Population Changes

The educational implications of population phenomena have been given a great deal of attention in recent years. The Project on Instruction of the National Education Association says, "More and more, plans and decisions in education should be based upon sound demographic information and understanding as our population continues to increase, as age distribution continues to shift, as population centers shift, and as teaching becomes more complex." [11]

The population of the United States was about 100 million in 1917, 144 million in 1947, 175 million in 1959, and 192 million in 1964. Between 1950 and 1960 the population increased by 28 million people—the largest increase in population of any decade in our history. There is one birth in the United States every 7.5 seconds and one death every 19 seconds, giving us a net population gain of one person every 10.5 seconds—about 3 million every year. If this trend continues, we will have 260 million people by 1980 and 350 million by A.D. 2000.

Enrollments in elementary and secondary schools have, of course, reflected the growth in population. Enrollments in public and nonpublic elementary and secondary schools increased from 28.6 million in 1949–1950 to 42.4 million in 1959–1960; the estimate for 1969–1970 is 53.2 million. College and university enrollments grew from 1,331,138 in 1946 to 3,450,000 in 1957. It is estimated that elementary school enrollments will grow 50 percent during the decade of the 1960s, that high school enrollments will double, and that enrollments in colleges and universities will double or triple.

The impact of the population explosion on our schools, highways, hospitals, and other public services has been and will continue to be tremendous.

[11] Project on the Instructional Program in the Public Schools, p. 97.

How can jobs and a decent standard of living be obtained by these additional millions of people? In what kinds of homes and communities will they live? What chance will their children have for an adequate education? These are vital concerns not only for government, industry, and labor; the schools are also involved.

The rapid growth of American cities is an aspect of the population problem that deserves special attention. This growth has come primarily from three sources: the over-all population explosion, the rural–urban migration, and immigration. Urban communities had 51 percent of the population of the United States in 1920; by 1960 this had increased to 85 percent; and the trend has continued since 1960. The migration of Negroes from the South to the North and West and from rural to urban areas has been spectacular. In 1860, 92 percent of the Negroes in the United States lived in the South; in 1910, 89 percent; and in 1950, 68 percent. In 1910, only 27 percent of the Negroes lived in urban communities; by 1950, 90 percent of those living in the North and West and 48 percent of those living in the South were in urban areas.

It would be difficult to estimate the contributions made by ethnic minority groups to the strength and vitality of the life in American cities, but the task of integrating these segments of the population into the life of our cities has caused a great deal of concern. The blackboard jungle, the drop-out problem, juvenile delinquency, and housing conditions in city slums have been the natural consequences of allowing our cities to grow up like Topsy, without adequate planning in terms of human values. An American success or failure in dealing with the problem of integration may well be the deciding factor in the ideological contest now being waged between the two systems of society. At least three fifths of the people of the world are non-Caucasians.

Changes are also taking place in the age distribution of the population. The percentage of the total population included in the age group between twenty and sixty-five years of age, regarded as the bulk of the working population, has been declining in recent decades and is expected to continue to decline in the future. At the same time, there has been an increase at both ends of the scale. The age group between five and fourteen years of age increased 8.4 percent between 1940 and 1950; by 1955, it had increased 37 percent over the 1940 figure, and the rate of increase is expected to continue through the decade of the 1960s. The percentage of the total population included in the age group over sixty-five years of age was 3 percent in 1850, 4 percent in 1900, 5.6 percent in 1930, 6.9 percent in 1940, 8.2 percent in 1950, and 9 percent in 1960.

Physical mobility is a notable characteristic of the American people. A report issued in 1960 showed that three of every ten people had moved from their native states and that only 26 percent of the population had lived in the same house for ten years or more. People living in rural areas moved less fre-

quently than those living in urban areas, 47 percent having lived in the same house for ten years compared to only 21 percent of the urban population that had lived in the same house for ten years.

These population trends have many educational implications. Unprecedented increases in elementary school enrollments, particularly in urban communities, have created serious administrative problems and have hampered efforts to focus attention on improving the quality of instruction. It was estimated in 1963 that the number of pupils exceeded normal building capacity by almost 1,666,711 and that 418,341 children and youth were attending curtailed or half-day sessions. The population explosion, which has brought about increasing anxiety about college entrance, has caused greater concern about school marks among parents and students.[12] The increasing percentage of people over sixty-five years of age has limited the ability of states to provide adequate educational facilities for children and youth.

Our Affluent Society

Throughout our history, until recently, our people have been preoccupied with the problem of producing enough material goods to go around; now our primary concern is what to do with material goods coming from our farms and factories in ever-increasing volume. Our thought and our action have been patterned in terms of an economy of scarcity; now our planning must be done in terms of an economy of abundance.

Our gross national product increased from $197 billion in 1947 to $343 billion in 1957 to over $600 billion in 1964. Per-capita income increased from $600 a year in 1900 to $2000 a year in 1957. Hours in the working week in industry decreased from 60 hours in 1900 to 40 hours in 1957. A single worker today produces six times as much in a day as did his great grandfather a century ago. From 1947 to 1957, the people of the United States spent $110 billion for new houses and apartments; $32 billion for new schools, hospitals, and government buildings; and $28 billion for new highways. In 1952, the electronic computer was an oddity; by 1964, about 15,000 of them were at work. In 1954, only a few hundred people were seeking careers in the field of computer technology; in 1964, at least 250,000 people were working as systems analysts, console operators, and programmers. The general state of America's productive capacity was summarized in July 1964 as follows:

A glow of contentment seems to hover over this rich and prosperous land —70,000,000 people at work, 1,500,000 new houses built in a year, 8,000,000 new cars delivered in one 12-month period. For over 40 months, the economy has put on a dazzling performance. But the glow also camouflages some ills and challenges that beset the nation.[13]

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[12] Project on the Instructional Program in the Public Schools, p. 96.
[13] "Tomorrow Is Here!," *Changing Times: The Kiplinger Magazine*, July 1964, p. 8.

Woodrow Wilson once expressed the opinion that colleges should give to the country men and women who could distinguish between promises and threats. Change does not always represent progress, and some of the trends in our culture could easily become threats unless they are recognized and unless measures are taken to counteract their influence. Gunnar Myrdal, the distinguished Swedish economist, has said, "There is an ugly smell rising from the basement of the stately American mansion." [14] He was calling attention to millions of young people without adequate education who are without hope of steady employment any time in their lives; to millions of young Negroes who have discovered that the only jobs they are qualified to fill no longer exist; to millions of older workers thrown out of work by technological advances. If poverty is defined as a multiperson family having to live on less than $4000 a year or an unattached person having to live on less than $2000 a year, we had 38 million Americans (one fifth of the nation) living in poverty in 1960. The creation of a substratum of people without the education or training needed to admit them to the main stream of American life and work is clearly a threat to American ideals of equality of opportunity and the worth of the individual.

Greatness for what? Some serious students of American life are raising questions about how we are using our abundance; they are warning us that the size of our gross national product will not guarantee our survival and help us to attain our national goals unless we learn to use it more wisely. Speaking of our national wealth, Galbraith has said:

> No other country has its equivalent. It is, presumptively, a valuable instrument for reducing the tensions that grow out of privation, helping to organize international order and thus to insure survival. But as things now stand it is largely unavailable, and to the extent that it is available its usefulness is gravely impaired. In recent times no problem has been more puzzling to thoughtful people than why, in a troubled world, we make such poor use of our affluence. [15]

We live in a rich and prosperous nation, but this should not blind us to the ills that beset our people. We still have our depressed areas in which the people do not share in our general prosperity; for every eighteen people who have jobs we have one person who is out of work. Too many of our young people are failing to get an adequate education; for every two students who graduate from high school there is one who drops out before graduation. Racial and religious prejudices still stand in the way of national unity; juvenile delinquency and social disintegration still plague many of our large cities. It remains to be seen whether we will be willing to cut back on some fringe

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[14] Gunnar Myrdal, "It's Time to Face the Future," *Look*, November 19, 1963, p. 105.
[15] John Kenneth Galbraith, *The Affluent Society* (Boston: Houghton Mifflin Company, 1958), p. 180.

consumer luxuries and put more of our abundance into education and other agencies for releasing human talents; whether in fact we will be willing to pay any price, bear any burden, and endure any hardship to ensure the future of our way of life.

A Broadening of Opportunity

The American scene has witnessed a broadening of opportunity on many fronts. In 1929, the top 5 percent of our population received 34 percent of the total income of individuals; by 1952, the top 5 percent received only 18 percent of the total income of individuals. The social security program has broadened to some extent the opportunities of the aged, the unemployed, and the handicapped. Substantial gains have been made in improving standards of living and working conditions for laborers, and in removing discriminations against minority groups.

A broadening of opportunity has also been taking place in the fields of art, music, and literature. There were more sales of paintings during the 1940s than during the entire period of United States history previous to that year; the total attendance at art exhibits in 1948 alone was over 50 million. In 1900, there were only a few symphony orchestras in the larger cities; today there are more than twenty major orchestras and nearly a thousand small community orchestras. Musical organizations have developed rapidly in schools and colleges; and music has been piped into factories, restaurants, automobiles, and air terminals. Beethoven's *Fifth Symphony* can now be heard in millions of homes, thanks to radio, television, and high-fidelity recording. The situation in the field of literature is perhaps not as bad as some people think. Allen made a rather comprehensive survey of trends in this field and came up with two significant conclusions: "Much of the best writing in the world is being done in the United States"; "There is a big American market for good writing if it and the price are within easy reach." [16] The broadening of opportunity in the field of literature is illustrated by the phenomenal growth in the sales of paperbound books, which in 1951 reached the figure of 231 million copies. Although our technological and economic achievements have not provided solutions for all our problems, there is much evidence that the United States is on the whole a better place in which to live than it was a half century ago.

Pressures to Conform: Threats to Creativity

Many studies of changes in the American character call attention to pressures to conform and cultural blocks to creativity. One study identifies three types of people formed at "the knee of society" in different regions, eras, and groups: tradition-directed people, inner-directed people, and other-directed

[16] Frederick Lewis Allen, *The Big Change* (New York: Harper & Row, Publishers, 1952), pp. 273–277.

people. Industrialization, urbanization, and centralization in American life during recent decades have created a climate favorable to the development of other-directed people, who have a tendency to look to others for cues as to how to live.[17]

Another fascinating study of the shift in American ideology describes the *organization man* as he is prepared in schools and colleges and as he operates in corporations, foundations, laboratories, and other forms of group life. It concludes that education must play an important role in bringing about a reversal of current trends.[18]

Heckscher summarizes the new order in the United States by saying that we have changed from a society that owns things to a society that belongs to things. He says that, "Men worry less about getting on than about getting in." A case in point is the increasing number of college graduates who join the corporation that promises a career of security and a safe retirement. Material products are not regarded as possessions in the old-fashioned sense; rather, they are symbols of participation, and their value changes with the tastes and fashions of the group of which the individual is a part. He concludes that, "The question is not whether the prevalence of the group is bad. It is whether the conditions exist which give meaning to the group and make participation in it a liberating experience for the individual." [19]

Other pressures to conform have been recognized in the urge to persecute those whose views dissent from the majority, in the absence of strong political minority parties, and in the essential similarity of political parties. These pressures are also found in the schools in the form of emphasis on group processes, group conformity, and group judgment. These practices have gained widespread acceptance in schools on the theory that the society in which the school exists is so competitive and individualistic that the school must counteract these conditions. Perhaps a better understanding of trends in the culture will result in no less emphasis on group processes, but in greater efforts to see to it that conditions exist that permit the individual to make unique contributions to group enterprises.

A New Adventure in International Relations

A reversal in our traditional foreign policy, which has occurred since the end of World War II, raises promises and threats that are more significant perhaps than changes in population, increased productivity of industry, and changes in the American character. The policy of isolationism, of avoiding

[17] David Riesman, *The Lonely Crowd* (New Haven, Conn.: Yale University Press, 1950).

[18] William H. Whyte, Jr., *The Organization Man* (New York: Simon and Schuster, Inc., 1956).

[19] August Heckscher, "The Next Two Decades: Coming Changes in American Life," in *Current Issues in Higher Education* (Washington, D.C.: National Education Association, 1957), pp. 1–2.

"entangling alliances," dominated our dealings with other nations during the eighteenth and nineteenth centuries and was reaffirmed after World War I. By the end of World War II a majority of the members of both major political parties had become convinced that we do not inhabit the earth alone.

When we took active leadership in establishing the United Nations we left the more limited world of our fathers and embarked on a new and strange course, the implications of which could be but dimly understood at the time. We were convinced that peace and economic security depended not only on the actions of our own people and our own government, but upon the actions of the peoples of the world and of their governments as well. Before the end of hostilities in World War II, steps had been taken to establish the United Nations organization. It was assumed—by some leaders at least—that an international police force might be created to maintain peace and to prevent aggression. In 1944, when President Roosevelt was running for a fourth term, he said that the United Nations must have the power to act quickly and decisively to keep the peace—by force, if necessary. Hopes were high for an enduring peace that would relieve us of the burden of maintaining huge military forces and permit us to budget more of our income to schools, hospitals, roads, and other essential peacetime enterprises.

These hopes for a peaceful and law-abiding family of nations were doomed to disappointment and the world soon became divided into two armed camps, with Soviet Russia making a determined bid for world domination and the United States having no alternative but to counter the threat. The measures taken to counter the threat, to develop a program of joint action with other free nations of the world, have occupied the center of attention in national affairs and have made the postwar years an anxious age. Helping real and potential allies to build up their military capabilities, helping them to avoid economic collapse, rendering technical assistance to under-developed areas through the Point Four Program, helping to organize and develop the North Atlantic Treaty Organization, providing most of the military force to stop Communist aggression in Korea, and supporting the United Nations are but a few of the measures taken. The period of international tensions has resulted in the largest peacetime military budget in our history, has upset the plans of our young men by requiring them to enter military service for extended periods, has subjected our economy to inflationary pressures, and has required thousands of our citizens to live in foreign countries.

The United Nations began in 1945 with fifty-one member governments, has added thirty-one members in twelve years, and only Russian-American conflicts prevent it from adding the German and Chinese governments to make it a world-wide society of nations. Over the years, the organization has become chiefly concerned with easing tensions between the Union of Soviet Socialist Republics and the United States. It has served as a useful forum where controversial matters could be discussed; as a brake, avoiding or post-

poning showdowns; and as an unarmed peace organization which could support its decisions only by the force of world opinion.

The new role in world affairs came upon us so suddenly that we were not prepared to deal with it adequately. International problems are of such magnitude and complexity as to baffle our present generation. It is generally recognized that the schools have a major role to play in educating for intelligent world citizenship. Some promising efforts in this direction are already in operation, including the teacher exchange program, the Fulbright Scholarships for study abroad, the large number of foreign students who are studying in American colleges, and the Peace Corps.

The Relation of the Government to Economic Life

Economic activity is subject to some form of regulation or control by the government in any orderly society. The term "regulation" seems appropriate only when the discussion is concerned with a private enterprise type of economy, for in other types the government controls or directs economic activities. The right of the individual to own property and to operate a private business is one of our basic American values. Complete control or direction of the economic system, such as that exercised by the governments of some other countries, is incompatible with our concept of democracy, for it has frequently led to an extension of controls into other aspects of life. This does not mean, however, that restrictions cannot be imposed on the property rights of some people so that the rights of others can be expanded; the right, for example, to condemn private property for public use has long been recognized. The need for a properly constituted legal authority to promote the general welfare and to protect the rights of citizens is generally recognized. Sharp differences of opinion exist, however, as to whether the role of the government in regulating the economic life of the nation should be expanded or curtailed. Children and youth, who will be expected to make intelligent decisions regarding these matters as adults, need to learn as rapidly as their ability permits what services are provided by the government and how the government influences the economic well-being of its citizens.

The government of the United States has always assumed some responsibility for the economic life of the nation. Indeed, one of the principal reasons for adopting the Constitution was to provide remedies for the economic chaos that existed under the Articles of Confederation. Economic problems received the attention of statesmen during Washington's administration, Jackson's administration, and the administration of every other president before the Civil War. The Civil War itself was to no small degree a struggle over the relationship between property rights and human rights.

Since the Civil War, the government has become increasingly involved with stimulating and regulating the economy. The use of public lands to encourage the building of railroads, the enactment of protective tariffs, the

regulation of the currency, the establishment of the Interstate Commerce Commission and the Federal Trade Commission, are a few examples. The prime example, however, came during the depression of the thirties, when the government took unprecedented steps to stimulate economic recovery and to prevent future depressions.

Since the end of World War II, we have witnessed the emergence of a new era in respect to the relation of the government to the economic life of the nation. The government is today the most important single factor affecting the economy; it is the largest moneylender and spender in the nation, and it employs the most people. If we are to understand the age in which our children live, we need to explore some of the factors that have contributed to this state of affairs. The new era of world-wide interdependence, the military revolution, the recent industrial-scientific revolution, and the emergence of new underdeveloped nations are some of the factors that have thrust this nation into a new era and have increased the responsibilities of the government.

The circumstances that forced this nation into a new adventure in international relations, and the subsequent activities that resulted in the largest peacetime national budget in the history of our country, were explained in the preceding section. Peter Drucker maintains that we have moved out of the "modern" age into the "postmodern" age—an age in which our actions must be measured by "the stern demands of today." He says:

> For the first time we have entered into the phase of world history; that is to say into a phase in which the interacting influences of all countries and all nations with their variety of social and political systems will affect the lives of all of us more and more.[20]

The development of the atomic bomb set off a series of events that constitute a military revolution; never before have changes in military techniques had such a profound effect on all mankind. As the armaments race has increased in tempo, military objectives have provided the main impetus to technological advances, the cost of new defense weapons and installations has soared, and the economic growth of the United States has become more closely interwoven with federal expenditures. Indeed, there has been a great deal of speculation concerning what would happen to the economy if military expenditures were cut back to normal peacetime levels.

One of the most significant facts about the current scene is the extent to which research and development related to our military and space-exploration activities have revolutionized peacetime production. The by-products of the military revolution include jet propulsion, electronically controlled machin-

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[20] Peter Drucker, *Landmarks of Tomorrow* (New York: Harper & Row, Publishers, 1959), p. ix.

ery, and nuclear energy for peacetime uses. James E. Webb, NASA adminis-
trator, wrote in 1962 concerning the planned exploration of the moon:

> Calling, as it does, on the most diverse resources in our economy, it is
> bound to result in a great variety of new consumer goods and industrial
> processes that will raise our standard of living and return tremendous benefits
> to us in almost every aspect of our national life.[21]

Since World War II, the government of the United States has become
increasingly concerned with the advancement of science and technology.
Today, the new abbreviation R & D (research and development) is almost as
well known as GNP (gross national product). However, the abbreviation
needs some explanation when it is used in relation to expenditures of the
federal government. The term "research" refers to study directed toward the
accumulation of more scientific knowledge, while the term "development"
refers to the systematic use of this knowledge in the field of technology. More-
over, it should be understood that development represents approximately two
thirds of the total research and development dollar for any given year. Some
idea of the magnitude of this phase of the activities of the federal government
can be gained from the statistics available for 1962, 1963, and 1964. The gov-
ernment obligated $11.1 billion for research and development (including
R & D plant) in 1962, $14.5 billion in 1963, and $17 billion in 1964. Congres-
sional action on the budget and subsequent administrative decisions reduced
these amounts so that the expenditures for each of the three years were as
follows: 1962, $10.4 billion; 1963, $12.2 billion; and 1964, $15 billion. The
agencies that received the bulk of these funds were the National Aeronautics
and Space Administration, the Department of Defense, the Department of
Health, Education, and Welfare, the National Science Foundation, the
Atomic Energy Commission, and the Federal Aviation Agency.[22]

Another development of the period since World War II that has in-
creased the responsibilities of the government of the United States is the
emergence of the peoples of Asia and Africa from colonialism. These countries,
along with our Central and South American neighbors, have become increas-
ingly alert to the potential for sharing in the fruits of technology and for as-
suming a significant role in world affairs. Helping these peoples to reduce
poverty and to enjoy the fruits of technology is not merely a humanitarian
matter, it is a matter of self-interest in which all the nations of the Western
world will share. One writer states the problem as follows:

> The task is immense, calling not only for capital outlay not yet calcu-
> lated, but for an army of men from scientists and technologists to linguists,

[21] James E. Webb, *Space: The New Frontier* (Washington, D.C.: U.S. Government
Printing Office, 1962), p. 1.

[22] National Science Foundation, *Federal Funds for Research, Development, and Other
Scientific Activities, Fiscal Years 1962, 1963, and 1964* (Washington, D.C.: U.S. Govern-
ment Printing Office, 1964).

who will assist in economic development of these nations. It is obvious that aid will come from the Soviet Union and from the Western industrial nations.[23]

This analysis of activities of the federal government in relation to the economic life of the nation is by no means comprehensive. The government engages in productive activities, such as providing free highways, low-cost housing, and multipurpose dams for flood control, irrigation, recreation, and hydroelectric power. It engages in promotional activities, such as gathering economic data, publishing weather reports, issuing patents, and providing price supports for farm crops. It provides protective services by establishing standards that manufacturers must meet, by regulating the sales of stocks and bonds, by protecting savings and bank deposits up to $10,000, by passing legislation providing for workmen's compensation, unemployment insurance, old-age assistance, and minimum wages.[24]

Realistic planning for the education of America's children will be influenced by an understanding of the forces at work in our era and of the increasing responsibilities of the federal government in the economic arena. We are planning for children who will live their whole lives in an age of constantly accelerated change, in the first phase of world interdependence, in a period of "war economy," in the midst of the second industrial revolution, and in a period of enormous ferment among the peoples of underdeveloped countries. Curriculum workers must become students of the forces at work in our society in order to plan educational programs that are in tune with the main stream of events.

Education and Economic Strength

The United States has experienced great economic growth; our average standard of living is the highest in the world. While two thirds to three fourths of the people of the world go to bed hungry every night, we have better homes, more food, better clothing, and more luxuries than ever before. Some authorities predict that the standard of living of the average American family will be doubled in about thirty years.

What factors account for the high standard of living in the United States? We have an abundance of natural resources—land, minerals, water, timber, and favorable climate. We have a large number of competent business managers—men who understand the management of personnel, plants, machines, and financial resources. Technological developments have supplied us with power-driven machinery, which has increased productivity and provided better

[23] Tom Stone, "For Whom We Are Planning: The Age in Which Our Children Will Live," in National Council for the Social Studies, *Social Studies for the Middle Grades* (Washington, D.C.: National Education Association, 1960), p. 29.

[24] For a more detailed discussion of these activities see Lavone A. Hanna, and others, *Unit Teaching in the Elementary School* (rev. ed.; New York: Holt, Rinehart and Winston, Inc., 1963), pp. 12–14.

working conditions. Business competition, which stimulates improvements, increases productivity, and decreases costs, has been more vigorous in the United States than in some other industrialized countries. Other countries, of course, have the favorable factors operating to some extent. At least four other countries—Canada, Brazil, U.S.S.R., and China—have natural resources at least as great as ours. The standard of living in Canada is perhaps three fourths as high as ours, in the U.S.S.R. it is perhaps one third as high as ours, in Brazil it is one tenth, and in China it is still lower. It is the human resources that really count in the economic development of nations. The people of the other countries mentioned have not developed their rich natural resources as have the people of Canada and the United States.

Several economists have pointed out in recent years that the acquired skills and knowledge of people should be included in the concept of *capital*. Indeed, Adam Smith, who laid the foundations for classical economics when he wrote *The Wealth of Nations* in 1776, emphasized the idea that the acquired abilities of all the inhabitants of a country should be included as a part of its capital. Irving Fisher, an American economist whose writing occurred more than half a century ago, included both the human element and material objects in his conception of capital. Schultz has recently referred to the overcommitment on the part of many economists since Fisher's time to a partial concept of capital restricted to material objects. He says:

> It became clear to me (also) that in the United States many people are investing heavily in themselves as human agents, that these investments in man are having a pervasive influence upon economic growth, and that the key investment in human capital is education.[25]

Wernette, who presents an interesting analysis of the factors that have contributed to productive gains in the United States, concludes:

> The present writer has long been of the opinion that education—good education—has been a vital factor in this development. If the several factors discussed above are the proximate causes of productive gains, education may well be described as the cause behind the causes.[26]

Since the end of World War II, there has been increasing evidence that the American people regard education as a vital factor in national survival. The G.I. Bill of Rights is the popular name for two acts passed by Congress to assist veterans of World War II and the Korean War. The Servicemen's Readjustment Act of 1944 helped World War II veterans and the Veterans' Readjustment Assistance Act of 1952 applied to veterans of the Korean War. By 1946, 10 million veterans had received financial assistance for education

[25] Theodore W. Schultz, *The Economic Value of Education* (New York: Columbia University Press, 1963), p. viii.
[26] John Philip Wernette, *Government and Business* (New York: The Macmillan Company, 1964), p. 167.

and training under the first of these acts; 2,200,000 of these had attended college. Aside from the purely humanitarian aspect of this legislation, it is now realized that the investment has already been repaid many fold in the form of increased earning power and in the form of taxes collected by the government. Additional evidence came in 1958 when the National Defense Education Act provided federal funds to support new and improved programs in mathematics, science, and foreign languages. The National Science Foundation, which was established to administer this program, began its activities with a modest budget of $3.5 million; by 1961, the budget had risen to $261.7 million; and by 1963, to $360,800,000. The President's Commission on National Goals made this recommendation in 1960: "Annual public and private expenditures for education by 1970 must be approximately $40 billion—double the 1960 figure." [27]

The Challenge of Leisure

Education for the worthy use of leisure was one of the *Seven Cardinal Principles of Education* developed by the National Education Association in 1918. It appeared again in the statement of the Educational Policies Commission in 1938 as follows: "The educated person is participant and spectator in many sports and pastimes. The educated person has mental resources for the use of leisure." Recent books and articles dealing with the implications of social trends for education have given a great deal of space to the challenge of leisure. They provide a great deal of information relating to the increasing amount of leisure time available, how Americans spend their leisure, and the implications for the school program.

Hours in the work week of laborers in industry have been decreasing: sixty-six hours in 1850, thirty-three to forty hours in 1960, and the estimate for 1979 is twenty to thirty hours. The prediction has been made that no longer than twenty-five years from now 2 percent of our people will be able to produce all the goods and food that the other 98 percent can consume. [28] These statistics have convinced some writers that the golden age of leisure is dawning; that because of automation people are going to have an unprecedented amount of uncommitted time; and people will use this time for self-fulfillment through creative play, travel, intellectual pursuits, and social service.

There can be little doubt that we now have the potential for producing everything we need with fewer hours in the work week, less manual labor, more time for the young to get an education before taking a job, and earlier retirement. Several roadblocks, however, stand in the way of realizing this potential,

[27] President's Commission on National Goals, *Goals for Americans* (Englewood Cliffs, N. J.: Prentice-Hall, Inc., 1960), p. 7.

[28] Ernest Havemann, "Leisure, the Great New Challenge," *Reader's Digest*, August 1964, p. 125.

it may take many years to create conditions which will enable the great bulk of people to derive pleasure and self-fulfillment from long hours of leisure. In the first place, there are large segments of the population to which the reduction of hours in the work week does not apply. Teachers generally spend almost fifty hours per week on school-related tasks, and physicians, lawyers, scientists, and other professional and self-employed persons spend a great deal more than forty hours per week at work. Another large segment of the population consists of people who have neither the money nor the education to engage in constructive leisure-time activities. Finally, the philosophy that work alone is noble has been so firmly embedded in the fiber of all Americans that there is a feeling of guilt about engaging in any form of recreation or leisure-time activity.

It is true, nonetheless, that Americans do engage in a great variety of leisure-time activities: watching television heads the list for most people, visiting friends comes in second for those under forty years of age, and working in the yard or garden ranks second for those over forty. Participation in sports ranks in the top five favorite leisure activities of teenagers. About two thirds of American families take automobile trips averaging 1000 miles or more during vacation time and more than a million Americans visited Europe in 1962. Participating in amateur music groups, attending concerts, and visiting art galleries take up increasing amounts of leisure time. But, reports also reveal that 25 million people attended boxing matches during a recent year, that $377 million was spent at race tracks, and that $8.9 billion was spent for alcoholic beverages.[29]

Education has an important role to play in helping Americans develop the attitudes, the skills, and the information needed to make the best use of leisure. This is an area in which the school program must take into account significant trends in the culture. Programs in reading, music, art, and physical education in particular face the challenge of education for worthy use of leisure.

SUMMARY

1. The broad outlines of an elementary curriculum for the second half of the twentieth century will be determined to a large extent by the realities of the age in which we live.

2. The curriculum worker must be a student of contemporary American society; he must look for clues in its conditions, trends, practices, and aspirations.

3. The anthropologist, the sociologist, the political scientist, and the specialist in other disciplines can supply information that will help shape an effective educational program.

[29] Project on the Instructional Program in the Public Schools, pp. 53–56.

4. Curriculum making must be a continuous process if schools are to keep pace with rapidly changing conditions in our society.

5. Curriculum planning must take into account the interdependence of contemporary life and the changes that are taking place in the American family.

6. Curriculum decisions must be based on sound information about the population explosion, the shifts in age distribution, and the shifts in population centers.

7. Curriculum planning must take into account the fact that we live in a prosperous nation, in an era of broadening opportunity, and in an age in which many of the world's people do not share in our general prosperity.

8. Pressures to conform and cultural blocks to creativity abound in our society; the school program must provide opportunities for individuals to make unique contributions to group enterprises.

9. Our new adventure in international affairs places a heavy obligation on the schools to prepare children for intelligent world citizenship.

10. Curriculum planning needs to take into account the forces working in our era to increase the responsibilities of the federal government and the extent to which education is a factor in the economic strength of our nation.

11. Education has an important role to play in helping our children develop the attitudes, skills, and information needed to make the best use of leisure time.

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Stone, Tom, "For Whom We Are Planning: The Age in Which Our Children Will Live," in National Council for the Social Studies, *Social Studies for the Middle Grades*. Washington, D.C.: National Education Association, 1960. Emphasizes the importance of the new era of world interdependence, the revolution in military techniques, the new industrial and scientific revolution, and the emergence of the underdeveloped nations.

Wernette, John Philip, *Government and Business*. New York: The Macmillan Company, 1964. Pages 160 to 167 explain the factors that have contributed to the economic growth of the United States; predicts that the gross national product will be doubled in less than twenty years.

SELECTED FILMS

Assignment: Tomorrow. A three-reel sound film indicating the importance of the teacher in preserving our American way of life. (National Educational Association)

Education Is Good Business. A one-reel sound film that shows the difference good schools make in business conditions. (General Picture Productions, Des Moines, Iowa)

Telstar! A twenty-seven minute color film showing close-up scenes of the launching July 10, 1962 and portions of the "live" programs transmitted by television between Europe and the United States. (Southwestern Bell Telephone Company, Oklahoma City, Oklahoma)

Photo Comment

COMPENSATORY EDUCATION FOR YOUNGER CHILDREN

One of the remarkable phenomena of the mid-sixties is the awakening in the poor of faith in education as a means to a better life for their children. American immigrants of two or more generations ago had a similar faith, and today the son or grandson of an immigrant illiterate may be a distinguished member of American society. Today's poor have been defeated for so long that the awakening of ambition for their children waited upon a drastic change in society at large, and that change appears imminent in the community action programs now getting underway in the war on poverty.

Aiding education's war on poverty is an awareness of the fact that disadvantaged children with learning problems are not necessarily stupid nor suffering from emotional blocks. The low IQ of many pupils is the result of an environment lacking in intellectual and sensory stimulation, particularly language, rather than the result of heredity. Studies of lower-class homes reveal (1) a language deficiency, both in the standard of English spoken and in the extent to which language is used to communicate ideas; (2) the noise level in these homes is high, so that children learn to screen out sounds, and so to be inattentive; (3) the homes are lacking in books, pictures, toys, and other objects that stimulate, first, sensory-motor and later verbal activity, and facilitate the development of intelligence.

Programs in compensatory education can help to compensate for early deprivation. These programs are more effective when they begin with the preschool child, for the greatest gains in IQ resulting from compensatory education are made during the early years.

Several conditions would seem to be necessary if educational experiences are to be designed to match deficit: (1) Much of the child's day should be spent in small group instruction, with no more than six children to a teacher or assistant teacher; (2) the instruction should center around special cognitive activities, including language; (3) wide use should be made of community resources; (4) parents must be involved in the program; (5) there must be adequate provision for health needs of the children.

Children who live like this . . .

. . . can be reached and taught.

Problems and Projects

1. In any discussion of change in contemporary society, the problem of values must be considered. If the next generation is to tackle "the ills and challenges that beset the nation," then that generation must have a vision of a better America and the will to work toward realization of the vision. But what constitutes a better America? There are varying answers to this question. Powerful cultural forces like television present one image of the good life for Americans to which children are exposed from a very early age. What are the elements making up that image?

To find the elements, analyze television commercials and programs shown on any one evening between five and eight P.M. What examples do you find of moral courage, integrity, or other positive values? What examples of such negative values as hedonism (the have-fun, live-it-up generation), materialism, violence as a solution to problems, frontier justice (taking the law into one's own hands)? Pool analyses in class and discuss implications for the curriculum.

2. As the chapter points out, the school alone cannot provide adequate educational opportunities for children; the task requires home and community efforts as well. It has long been recognized, for example, that books, trips, educational toys and materials, and organized play experiences provided by the middle class contribute to readiness for school learning. It has been only recently, however, that we have seen how even such common experiences as trips to a department store or a soda fountain contribute to cognitive development. We have become more aware of the specific effects of such experiences as studies reveal the disadvantages suffered by children of limited cultural experiences. ("Culture" is used in the broader sense here to refer to all societal activities and not merely those considered to be refined or elevating.)

If possible, take a young child on a shopping excursion or to a soda fountain. Note the learnings in economics, science, and sociology as the child orders, pays the check, receives change, sips out of a straw, locates merchandise by departments, rides an escalator or elevator, experiences a "seeing-eye" door, and engages in other activities. How do such experiences contribute to readiness for school learning in such fields as reading, language arts, arithmetic, and social studies?

3. The text states, "Modern man is indeed obsolete unless he can adapt his social, economic, political, and educational agencies to the demands of a new age." But people tend to interpret the "demands of a new age" in the light of their own values and needs. A motel owner resists regulation of billboards on a new highway in the name of individual freedom, the rights of

free enterprise, and the needs of the traveling public. Those who see one of the demands of the new age as that of providing an esthetic environment for man argue against billboards in the name of group rights. The closing of some obsolete armed-services training centers on the grounds of saving the taxpayer's dollar was bitterly fought by local groups whose livelihood was threatened by the closing and who argued that the bases were essential to national defense. We can find many examples of such conflicts between individual rights and group rights in the face of demands for change.

This is not to argue that change per se is always desirable. One's sympathies are with the suburban housewives who surrounded century-old trees scheduled to be cut down to expand a state route through their community. The housewives argued for a rerouting of the highway that could be done at minimal extra cost. They lost; efficiency rather than esthetics won out.

The point of view put forward in this chapter is that pupils would be better prepared to cope with problems of responsible citizenship as adults if they dealt with significant problems of values at their level. Conflicts between individual and group rights exist in the elementary school, and demands for change are sometimes resisted by faculty as well as students. Analyze the issues involved in each of the following conflict situations. What would be your recommendations for resolution if you were a faculty member at the school in question? Should the school adapt, or should the pupil?

> The principal of Oakwood School has announced a ruling endorsed by his faculty that dress and appearance of pupils in his school must conform to certain standards. Specifically, in the upper grades, boys are forbidden to have long hair, girls must not wear shorts, slacks, or very short dresses, and children in the lower grades are not to wear cowboy boots to school. The pupils in the upper grades rebel and show up for school sporting as many items on the forbidden list as possible.
>
> Sixth-grade pupils in another elementary school want to eat lunch in their own classroom, rather than in the school cafeteria. They argue that the cafeteria is very noisy (true) and dirty (true). They will take responsibility for careful clean-up of the classroom, so that no extra janitorial work will be required.
>
> Seventh-grade pupils want permission to leave the school grounds at will during the noon hour. They argue that they often have legitimate errands to do in town, and that rules made for young children should not apply to them.

4. In our technological society, many families with more leisure time are developing a way of life in which bowling, shopping centers, and television are important sources of recreation. For decades, schools have accepted as one of their goals education for the wise use of leisure time. Would you say the examples just cited as major recreational activities would indicate wise use

of leisure time? How might the curriculum of the elementary school encourage development of interests in children that would lead to alternate activities in adulthood?

5. There is a problem related to the above that concerns aspirations of blue-collar workers for their children. These are the workers with steady jobs as policemen, milkmen, or unskilled factory workers whose pay may be low but who are not poor. The parents may or may not have finished high school, but they want their children to go to college. Yet the cultural level of the home is low. The mother's reading is confined to movie magazines and True Story, while the father's is limited to the sports page. The parents are more likely to buy Barbie dolls and miniature racing cars than books and recordings for their children, to provide tap-dancing lessons rather than ballet, and to take the children to an amusement park rather than the zoo.

If possible, collect additional information about blue-collar families. Work out in class an interview schedule to be used with elementary school children of blue-collar families, if such interviews can be arranged. Include items on reading materials in the home, family recreational activities, extra-curricular instruction, favorite toys or play equipment, provision for special music, art, or science activities.

Are children raised in homes where the cultural level is low likely to want the kind of education college provides? Will they be ready for it? What can the school do in the way of compensatory education?

The Curriculum
as an Expression
of Values

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Every society that has established and maintained schools has done so for the purpose of helping to achieve its social ideals. When the church was the dominant factor in determining social ideals, it sponsored schools designed to help in the achievement of its goals. When nationalistic states emerged to challenge the authority of the church, state-controlled school systems were established. One of the most carefully designed of these systems was developed by Napoleon. He said, "There cannot be a firmly established political state unless there is a teaching body with definitely recognized principles." The Nazi regime in Germany, the Fascist regime in Italy, and the Soviet regime in the U.S.S.R. provided vivid examples of the extent to which schools could be used to bolster social ideals.

DEFINING NATIONAL GOALS

A planned society, ruled by a dictator or a ruling class, usually has clearly defined goals toward which the energies of the entire nation are directed and the school program is specifically designed to contribute to the realization of these goals. During the Stalin regime in the U.S.S.R., for example, all im-

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portant decisions concerning education were made by the party in control of the national government, and teachers were essentially technicians who translated into practice the directives of this group.[1] In the United States, on the other hand, we live in a *planning* rather than a *planned* society; we have no official agency charged with the responsibility of formulating national goals. According to our concept of democracy, goals evolve gradually from the interaction of groups and individuals; they represent the combined judgments of a majority of our people at any given time; and they are subject to continuous redefinition and reinterpretation in terms of social changes.

The need for clearly recognized social ideals to serve as guides for educational planning has been emphasized for many decades. "Education, by which we thought to keep the electorate competent for self-government, was breaking down because we had no scale of values and no real objectives in our educational system," wrote James Truslow Adams in 1931.[2] During the same year, George S. Counts called attention to significant changes in American life and stated, "A major task which these changes are forcing upon us is the reformulation of the purposes of American life. And until we face this problem we shall find our educational theories unreal and sterile."[3] This theme was echoed in the late 1950s when a popular magazine carried a series of articles dealing with "the national purpose." These articles, written by ten distinguished Americans, generally emphasized the view that we had lost, at least for the time being, our sense of national purpose and that we were uncertain concerning how we should use our greatness as a nation.[3]

The President's Commission on National Goals

President Eisenhower declared, in his State of the Union Message of January 1959, that the country should define its national purposes. Later, he appointed a Commission on National Goals composed of eleven leaders in education, government, industry, labor, the legal profession, and public welfare. The report of this Commission, published in book form in 1960, presented a platform of basic American goals, such as concern for the individual, equality of opportunity, faith in the democratic process, adequate educational opportunities for all Americans, the importance of the arts in human development, a democratic economy, and concern for the health of our people.[4] The report, however, went far beyond the mere listing of basic American goals; it

[1] See George S. Counts and Nucia P. Lodge, *I Want To Be Like Stalin* (New York: The John Day Company, Inc., 1947), pp. 15–16.

[2] James Truslow Adams, *The Epic of America* (Boston: Little, Brown & Company, 1931), p. 349.

[3] John K. Jessup, and others, *The National Purpose* (New York: Holt, Rinehart and Winston, Inc., 1960).

[4] President's Commission on National Goals, *Goals for Americans* (Englewood Cliffs, N. J.: Prentice-Hall, Inc., 1960).

identified the barriers that needed to be surmounted and the tasks that needed to be performed during the 1960s if these goals were to be achieved. The Test Ban Treaty, continued support of the United Nations, civil rights legislation, the "war on poverty," and the Education Act of 1965, are but a few examples of efforts that have been made since 1960 to implement these goals.

Our society can and does formulate national goals. In fact, the more serious of our shared goals are rather widely known and accepted. As Gardner has stated, "To say that we are confused is one way of evading the difficult tasks before us." [5] The schools alone cannot achieve any of these national goals, but they can plan programs that are in harmony with these values. Heffernan has called attention to the significance of national goals for education in this statement:

> If Americans clearly know and accept their goals, live by them in the home, the school and the market place, and arrive at every decision of internal and international policy in terms of them, the men and women of our day will do their full part in ushering in a golden age for all humanity.[6]

DEMOCRACY AND THE CURRICULUM

That democracy is the highest social ideal of the American people has been amply demonstrated. Throughout its history this nation has stood before the world as a champion of human freedom; it has drawn people from many lands who wished to escape from class rule and despotism. Although it is obvious that in practice democracy is frequently repudiated in government as well as in education and that the average citizen has a very limited concept of its meaning, it is still a vital force in education and in American life. An understanding of the implications of democracy is therefore one of the major factors to be reckoned with in curriculum planning.

The idea that the school is society's chief formal agency for preserving and improving the democratic way of life is not new. It was more than 150 years ago that Webster wrote, "If, then, the youth were to grow into citizens capable of furthering democracy, it must be by means of an education suited to a democracy." In spite of the long-established faith in education as the foundation of democracy, however, only a small beginning has been made in learning the methods appropriate to that way of teaching and learning. A popular magazine made this statement a few years ago: "No United States citizens are fonder of praising democracy than the heads of that most authoritarian institution—the United States school." Until very recently, at least, democracy in education has been preached but not practiced.

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[5] John K. Jessup, and others, p. 73.
[6] Helen Heffernan, "Goals for Education," *Childhood Education*, September 1961, p. 5.

Democracy has been repudiated in practice by teachers and school administrators because they have not fully understood its meaning. It has been variously defined as a form of government, as a spirit, and as the right of everyone to do as he pleases. It is not surprising that those who hold such limited views of democracy find it difficult to make it work in schools. *Democracy is a process—a quality of human relationships that has the welfare of the individual as its paramount objective.* In this sense democracy can operate in any group of individuals, whether it be a nation, a family, a classroom, a factory, or a ladies' aid society. Furthermore, it can be seen in operation, provided one knows what to look for. Some of the essential characteristics of the democratic process are listed in the following sections as yardsticks for school practices. It is the conviction of the author that the success or failure of curriculum-improvement programs will be determined by the extent to which these principles are understood and practiced.

The Method of Experimentation

In a democracy, individuals and groups are free to experiment, to work out unique solutions to their problems. This is one of the innate strengths of democracy: Things are true only if they work out in practice and not merely because someone in authority said they were true. Democratic educational practices give each teacher and each child a chance to experiment, to express himself, to work out, under wise guidance, the solution to his problems. Authoritarian systems, whether in nations or in schools, dig their own graves by suppressing all ideas except those of individuals who are in positions of authority. How much authoritarian teaching can be found in our classrooms? How free are pupils to experiment? How much authoritarian administration can be found in our schools? How free are teachers to experiment with new methods, new materials, and new ideas? Classrooms and school systems need to be evaluated in terms of these questions if we are really interested in promoting democracy in education.

Equality of Opportunity

Equality of opportunity does not mean equality of possessions or equality of achievement. It simply means that every individual will have an opportunity to achieve as much as his ability and effort permit; that the school will provide opportunities for all children rather than for a selected few. It means that grade standards, promotion policies, or a narrow, book-centered curriculum will not stand in the way of helping a child develop to the full extent whatever talents he has. The school curriculum that provides opportunities for only the intellectual elite is out of harmony with democratic principles. The curriculum that does not offer any challenge to the more capable pupils is likewise undemocratic.

Participation by All Persons Involved in a Given Action

The democratic process broadens the base of judgments on which policies rest. School policies resting on the combined judgments of all persons involved are more stable than those resulting from the decision of one person. Furthermore, it is only by sharing in the choice of activities to be undertaken and by accepting responsibility for results that teachers and children grow in those qualities which make for the success of a democracy. The teacher who recognizes his responsibility for developing responsible, self-directing citizens will deliberately organize his teaching so that every pupil takes a responsible part in the work of the class. The principal who understands and appreciates democratic values organizes his work so that every teacher shares in the responsibility of making decisions and accepts responsibility for helping to carry out group decisions. It is only through meaningful participation that pupils and teachers grow in the ability to function effectively in democratic group processes.

Faith in People

The great leaders of the past have had faith in the ability of the people to make the right decisions when given adequate information. Democracy in education requires faith in the ability of children to become increasingly self-directing if given enough encouragement and guidance; it means faith in the ability of teachers to make intelligent plans for the school program when they are given sound leadership and sufficient time to do the job.

Respect for Personality and Human Worth

In a democracy, human beings are ends rather than means. School practices must be judged in terms of their effect on the children involved. A school may be very efficient and still be bad when evaluated in terms of democratic values; the schools of Nazi Germany were very efficient, but from the standpoint of democratic values they were very bad schools. Schools are evaluated in terms of the quality of living which they foster.

The teacher who wishes to evaluate his teaching in the light of the democratic principle of respect for personality should ask himself the following questions:

1. Do I expect all pupils to measure up to the same standard of conduct and achievement?
2. Am I tolerant of a pupil with an undesirable personality if he is making an effort to improve?
3. Is it ever possible for the slower pupils to experience success?
4. Are bright pupils challenged to achieve as much as their abilities permit rather than merely reaching grade standards?

5. Can a pupil admit lack of information without fear of criticism?

The principal who wishes to evaluate his leadership in the light of the democratic principle of respect for personality should ask himself the following questions:

1. Do I expect all teachers to use the same methods in teaching arithmetic, spelling, and other subjects?
2. Am I patient with a teacher who has difficulty in adjusting to newer procedures but is trying to improve?
3. Do I take time to try to discover the special talents of teachers and compliment them for outstanding achievements?
4. Are important responsibilities distributed among the teachers or do the most capable ones get all of the interesting and challenging assignments?
5. Do teachers feel free to admit mistakes without fear of criticism?
6. Do I make deliberate efforts to build teacher morale?

Opportunities for the Individual to Learn to Be Free

Discovering and using the methods of democracy involves clear understanding of the nature of freedom and how individuals obtain it. Teachers in the public schools have a particular responsibility for understanding this problem for they must not only teach the tricks of numbers and the shapes of letters, but they must help our future citizens learn the ways of democracy.

Freedom is not a gift; it is an achievement. The problem of the teacher is not to give children freedom but to help them learn to be free. Children do not learn freedom simply by being released from adult control; neither do they learn it by being held under the complete domination of the teacher from year to year. Freedom is achieved as the individual learns self-control which raises him above the necessity of social control. In the democratic school there is a decreasing amount of teacher control as children grow older and are able to take more responsibility for their own behavior.

Freedom involves the mastery of skills and techniques. An individual who cannot spell has little freedom of self-expression in writing; if he has not mastered certain techniques relating to form and color, he has little freedom of self-expression in art. Even if we regarded freedom as the right of the child to do as he pleases, he would still have to learn *how* to do as he pleases. A school curriculum is democratic to the extent that it helps children learn the skills, attitudes, and information necessary for free men.

Cooperation for the Common Good

Democracy cannot survive in a group composed of selfish individuals. A school curriculum that stresses competition alone cannot develop citizens capable of furthering democratic values. The teacher who cannot work effectively as a member of a team, who has not developed the skills of democratic cooperation, has no place in an elementary school. The principal who is in-

terested only in promoting himself, who has not developed the techniques of democratic leadership, is also unfit for his position.

This does not mean, of course, that all competition must be eliminated from the life of the elementary school; some competition is inevitable in school as well as in life outside the school. It simply means that children must learn the skills involved in cooperation as well as those involved in competition if they are to be prepared for effective living in a society that involves both.

The argument is frequently heard that we must train pupils for competition because we are living in a competitive society. The answer is that we are also living in a society in which it is necessary for the individual to cooperate with others if he is to accomplish anything worthwhile. Furthermore, the school should help to develop those traits and abilities needed for building a better society rather than merely perpetuating the undesirable features of the society we now have.

EDUCATIONAL OBJECTIVES

Interest in the role that education should play in our society has been increasing in recent decades. This intensified interest is not confined to members of the teaching profession; it is shared by parents, agencies of government, press, radio, television, and citizens in many walks of life. This is true in part because in this country educational policies are formulated by the people themselves rather than by the central government; in part because the schools reach more children than ever before; and in part because there is a growing conviction that good schools contribute to our economic welfare and to the survival of our democratic way of life.

Members of the school staff, because of their special preparation, are expected to be more keenly aware than others of the social significance of education and able to help other citizens understand and appreciate the contributions the school can make to the solution of problems of living. Curriculum improvement programs, therefore, have been placing a great deal of emphasis on developing increasing competence on the part of all staff members in formulating, stating, and interpreting to the public the objectives of the school program.

THE NATURE AND FUNCTIONS OF EDUCATIONAL OBJECTIVES

An important factor in the success of any individual or group enterprise is a clear recognition of the end, or condition, the individual or the group is striving to achieve. This is no simple task in an enterprise that involves the cooperation of as many people as does public education. Efforts to give a separate and distinct meaning to such terms as *outcomes, goals, purposes, aims,* and *objectives* of education usually prove to be more confusing than

useful. Definitions found in a standard dictionary and in the *Dictionary of Education* fail to support any such distinction. In this chapter, the terms are used interchangeably to mean the values sought through public education. This concept is broad enough to include the values sought by children and youth, by teachers and school administrators, by parents, and by the society the schools serve. Furthermore, no distinction need be made between the objectives of the elementary school and those of the secondary school. Certain objectives may be given more emphasis at one level than the other but the objectives themselves are the same.

Elementary school programs can continue to improve only as teachers pupils, parents, and administrators participate in defining the kind of school program they would like to have, in evaluating the present program in the light of commonly accepted criteria, and in making specific plans for improving the program. Clearly understood objectives serve several useful purposes in this process:

1. *Objectives define the directions in which it is desirable for growth to take place.* The teacher, as an agent of society, cannot avoid the responsibility for making decisions concerning what types of experiences are educative and what types are miseducative. Children will learn even when they do not attend school at all. They will learn from experiences at home, from the neighborhood gang, and from radio, motion pictures, and television. However, much of this learning may be miseducative because the experiences are not planned or directed toward the achievement of specific values. Education, or at least that phase of it for which the elementary school is responsible, is not synonymous with learning; rather, it is learning directed toward the achievement of values that are prized in the society in which the school exists.

2. *Objectives provide a basis for the selection of learning experiences.* Because there are so many interesting things that can be learned in school, teachers need some basis for selecting those that are most crucial in the life outside the school and those that children in the elementary school can be expected to learn. Unless learning experiences are selected in terms of a comprehensive list of objectives, the elementary school curriculum can easily become static, guided by tradition, and insensitive to the dynamic forces that affect the lives of children. Arithmetic, for example, can consist primarily of abstract drill in computation, neglecting the development of understanding, problem solving, and practical application of arithmetic to problems of everyday living. Other areas of the curriculum may consist primarily of memorizing the content of textbooks, neglecting the development of skills, methods of work, interests, and appreciations.

3. *Objectives provide a basis for evaluation.* Objectives indicate the information, skills, attitudes, and behavior patterns the school regards as im-

portant for children. Evaluation of pupil progress consists of determining the progress each child is making toward the achievement of these objectives. There can be no comprehensive program for evaluating pupil progress without clearly recognized objectives. Materials of instruction, methods of teaching, and pupil-teacher relations can be evaluated only in terms of their contribution to the achievement of the objectives of the school. Evaluation of the effectiveness of the school program also requires an understanding of objectives. The objectives of the school represent what the staff of the school is trying to accomplish with and for children. Evaluation of the school program consists of determining how well they are succeeding in what they set out to do. Objectives also help in interpreting the school program to the community. Research indicates that parents who are fully informed about the purposes and procedures of the school are usually well satisfied with what the schools are doing.[7]

SOME SOURCES OF EDUCATIONAL OBJECTIVES

Educational objectives in this country grow out of the needs of individuals living in an industrialized democratic society. They represent the best thinking of teachers, administrators, and parents at a given time; as conditions change and as research brings new information to bear on the problems of education, objectives must change to fit these new conditions. The objectives of the elementary school, therefore, give expression to a philosophy of education based on the realities of living in contemporary society, the values inherent in the democratic way of life, and the characteristics and needs of children.

1. *Objectives grow out of a philosophy of education.* Many teachers regard philosophy as a highly abstract, theoretical, and impractical study. It is true that a course in philosophy can be a form of busywork or a kind of mumbling in the dark that does not shed much light upon the path ahead. However, the teacher must have a working philosophy of education to keep his work from becoming a monotonous round of details. Plato says in the Third Book of the *Republic* that it is necessary to formulate the ideal so that the practical can know in which direction to move. The teacher's philosophy of education cannot be completed at any given time; it is a living, growing one that represents his vision of the results of his work in terms of richer lives for individuals and a better social order. Whether he is aware of it or not, every decision that the teacher makes in the classroom is related to his convictions about the worth of the individual, about the nature of the good

[7] Kenneth B. Henderson and Harold C. Hand, "To What Extent Is the General Public in Sympathy with the Current Attacks on the Schools?," *Progressive Education*, January 1952, pp. 110–115.

life, and about the role of the school in society; and these convictions constitute his philosophy of education.

2. *Objectives emerge from studies of contemporary society.* What children in the elementary school *should* learn depends to a considerable degree upon conditions existing in the society. The society that supports the school expects that it will develop in children and youth those insights, skills, and attitudes that will contribute to the health and vigor of society in the future. One source of educational objectives, therefore, exists in the vast array of information found in studies of contemporary society. Studies of population trends, of changes in family living, of technological developments that are changing many aspects of American life, of national income and per-capita income, of changes in the number of hours in the work week, of the use of leisure time, of the effects of mass media of communication, of the impact of automation, and of new developments in international affairs, to mention only a few examples, suggest sources of educational objectives.

In addition to studies of conditions and trends in the general culture, the conditions that exist in the local community need to be examined to understand their implications for the school program. Some conditions may exist in one community which require special emphasis in the school program of that community but not in that of another. Community surveys and other methods of getting information about conditions, problems, and resources of the community constitute an important source of materials to be used in the formulation of educational objectives.

3. *Studies of children and of the learning process provide sources of educational objectives.* Curriculum workers need to know not only what children should learn in order to live successfully in our rapidly changing society, but what factors motivate and encourage learning. If objectives are derived entirely from studies of the culture, learning experiences are not likely to be adapted to the capacities, interests, and motivations of children. It makes little difference how important certain content may be from the standpoint of the culture if it is not appropriate for children at a certain stage in maturation. The wise selection of learning experience depends to a large extent upon the teacher's understanding of how learning takes place and what learning experiences are appropriate for the children with whom she works. It is therefore desirable for teachers and other curriculum workers to collect many types of information about the children in their schools and to use this information when formulating objectives.

4. *Subject-matter specialists can suggest appropriate objectives.* An increasing number of subject-matter specialists are giving attention to the problem of suggesting ways that their fields can make a contribution to the general education of a wide variety of children instead of merely to a limited number who will specialize in a particular field. A report prepared by the Project on Instruction of the National Education Association has summarized the work

of several national projects that have drawn heavily on the talents of mathematicians, scientists, specialists in the language arts, specialists in modern foreign languages, and social scientists.[8]

SOME STATEMENTS OF OBJECTIVES

Statements of educational objectives have reflected rather consistently the social and psychological concepts dominant at the time they were written. Plato reasoned that the society of his time needed philosophers to rule, soldiers to defend, and artisans to produce. His proposals for education, outlined in the *Republic*, were frankly designed to promote a caste system of society. Martin Luther's plea for education as a responsibility of the towns and cities of Germany reflected the concern for the welfare and freedom of the individual which was the motivating factor in the Protestant Reformation. Wherever, throughout the world, schools have been established, they have been designed to support the dominant social ideals prevailing at the time.

Herbert Spencer is given credit for first popularizing the classification of human activities as a basis for educational objectives. He identified, in 1860, five major classes of human conduct as follows: self-preservation, the securing of the necessities of life, rearing and disciplining of offspring, the maintenance of proper social and political relations, and activities that make up the leisure part of life. Statements of educational objectives prepared by individuals and professional groups in this country since the beginning of the present century have followed this general pattern, differing only in form, in arrangement, and in degree of detailed analysis.

Several significant trends in educational theory are revealed by an examination of the following statements of objectives: (1) the trend toward more specific objectives rather than vague, general statements, (2) the trend toward stating objectives in terms of changes in behavior, (3) the trend toward increasing the scope of the school program, and (4) the trend toward increasing emphasis on physical and mental health, consumer education, economic efficiency, work experience, and skill in human relationships.

The Cardinal Principles of Secondary Education

In 1918, the Commission on Reorganization of Secondary Education of the National Education Association issued a report containing the seven cardinal principles of education. This was perhaps the most influential educational document issued in this country up to that time; crucial excerpts from it were reprinted and circulated by the millions. The seven cardinal principles are: health, command of the fundamental processes, worthy home membership, vocation, citizenship, worthy use of leisure, and ethical character.

[8] Dorothy M. Fraser, *Current Curriculum Studies in Academic Subjects* (Washington, D.C.: National Education Association, 1962).

The trend toward broadening the scope of education to include more than the fundamental processes is evident in this statement. Health was given a prominent place in the list of objectives as a result of the startling discoveries by the armed services regarding the physical condition of the young men called to service for World War I. The other objectives listed were closely related to problems of living, which were becoming the concern of the American people at that time. The limitation of this statement and of the three statements that follow occurs in the facts that the objectives are stated in general terms, which could mean many different things to different individuals, and that the general objectives are not analyzed in detail to show how the behavior of an educated person would reflect the achievement of the objectives.

The Counts and Chapman Classification

In 1924, George S. Counts and James C. Chapman identified six great interests about which human life revolves. Men must always care for their bodies, rear their children, secure economic necessities, organize for civic action, engage in recreation, and satisfy their religious needs.

The Bobbitt Classification

Also in 1924, John Franklin Bobbitt developed a detailed analysis of human activities for curriculum-building purposes, including language, health, citizenship, general social activities, spare-time activities, mental fitness, religion, parental activities, nonvocational practical activities, and vocational activities.

The Department of Superintendence Classification

In 1928, the Department of Superintendence of the National Education Association identified four general areas of education by listing the relation of the individual, first, to his own growth and development; second, to the world of nature; third, to the systems of organized society; and fourth, to the Power that in some way orders the development of man and his universe. "The individual self, nature, society, and God"—these four, and in particular the adjustments the individual self must make—constitute the objectives of education.

The Educational Policies Commission Classification

The classification of educational objectives proposed by the Educational Policies Commission of the National Education Association, in 1938, has been widely distributed and will, no doubt, rank high among the influential documents published in America during the past century. The report states:

> The general end of education in America at the present time is the fullest possible development of the individual within the framework of our present

industrialized democratic society. The attainment of this end is to be observed in individual behavior or conduct.[9]

The report of the Commission identifies four aspects of educational objectives. The first area calls for a description of the educated *person*; the second, for a description of the educated *member of the family and community group*; the third, of the educated *producer or consumer*; and the fourth, of the educated *citizen*. Following is a complete list of the objectives.

The Objectives of Self-realization

The Inquiring Mind. The educated person has an appetite for learning.

Speech. The educated person can speak the mother tongue clearly.

Reading. The educated person reads the mother tongue efficiently.

Writing. The educated person writes the mother tongue effectively.

Number. The educated person solves his problems of counting and calculating.

Sight and Hearing. The educated person is skilled in listening and observing.

Health Knowledge. The educated person understands the basic facts concerning health and disease.

Health Habits. The educated person protects his own health and that of his dependents.

Public Health. The educated person works to improve the health of the community.

Recreation. The educated person is participant and spectator in many sports and other pastimes.

Intellectual Interests. The educated person has mental resources for the use of leisure.

Esthetic Interests. The educated person appreciates beauty.

Character. The educated person gives responsible direction to his own life.

The Objectives of Human Relationships

Respect for Humanity. The educated person puts human relationships first.

Friendships. The educated person enjoys a rich, sincere, and varied social life.

Cooperation. The educated person can work and play with others.

Courtesy. The educated person observes the amenities of social behavior.

Appreciation of the Home. The educated person appreciates the family as a social institution.

Conservation of the Home. The educated person conserves family ideals.

Homemaking. The educated person is skilled in homemaking.

Democracy in the Home. The educated person maintains democratic family relationships.

The Objectives of Economic Efficiency

Work. The educated producer knows the satisfaction of good workmanship.

Occupational Information. The educated producer understands the requirements and opportunities for various jobs.

[9] Educational Policies Commission, *The Purposes of Education in American Democracy* (Washington, D.C.: National Education Association, 1938), p. 41.

good information and trained in viable modes of thinking to create new solutions.[12]

FORMULATION OF OBJECTIVES BY THE SCHOOL STAFF

Cooperative action by the entire school staff in developing a guiding philosophy for dealing with the concrete problems of school operation is an integral part of curriculum improvement. Formulating a written statement of the philosophy of the school after a period of study and exploration serves a useful purpose in giving the members of the staff a feeling of accomplishment and a sense of direction. But it should be remembered that the paper statement is not an end in itself. Its purpose is to bring about better teaching and better learning. Whether or not the study and formulation of objectives contributes to these results depends more upon the process than on the final product.

INITIATING THE STUDY OF OBJECTIVES

The extent to which teacher growth is achieved through a study and formulation of educational objectives is determined to no small degree by the way the process is initiated. The program may be initiated (1) through a study of the basic sociological and psychological foundations of the curriculum, (2) by having each member of the staff prepare a statement of objectives for the school program and then having these statements organized and summarized by a committee of the faculty, (3) by accepting some well-known list of objectives such as the Educational Policies Commission list and analyzing the items in terms of the problems of the local school, or (4) by having the teachers list problems that come up naturally in the course of a few weeks or months of the school term. This last approach is probably the soundest of all. A list will probably contain such problems as the following:

1. What shall our policy be in regard to first-year pupils who are not mature enough to complete in one year the work of the first grade?
2. Shall we attempt to group according to ability levels? If so, what abilities shall we consider?
3. Shall we teach history, geography, and civics as separate subjects or shall we develop a unified social-studies program?
4. What use shall we make of workbooks? How can we avoid making the mistake of substituting workbooks for teaching?
5. How much, if any, homework shall we require of pupils?
6. How can we find out how well satisfied parents are with our work and what phases they think need changing?

[12] President's Science Advisory Committee, *Innovation and Experiment in Education* (Washington, D.C.: U.S. Government Printing Office, 1964).

7. How much departmentalized teaching should we do in our school?

8. Should we work out a plan following the recommendation of the Educational Policies Commission to have the same teacher stay with a group of children for at least three years?

9. What shall we do about children of migrant parents who attend our school for only a few months each year?

10. What steps can be taken by our faculty to assist with the problem of desegregation?

11. How can we build motivation for learning on the part of parents and pupils?

12. How can we assist culturally deprived pupils in building a positive concept of self?

A serious discussion of problems such as these will inevitably lead to a realization that their solution depends upon the philosophy of the school. Since the philosophy of the school, like that of the individual teacher, emerges from an understanding of the social and psychological foundations of education, a study of these basic factors must come into the picture at some time during the formulation of educational objectives. The leader of the faculty group will simply be applying the principles of good teaching to his work with the staff if he introduces the study of these factors after the participants see the need for it.

PREPARING WRITTEN STATEMENTS OF OBJECTIVES

Statements of educational objectives are prepared in a wide variety of practical situations. They may be formulated by the teacher and a group of pupils working on a unit; by teachers working at a certain level of the school program, such as the kindergarten or the middle grades; or by the entire school staff in connection with system-wide curriculum-improvement programs. There are certain guiding principles that apply to most of these situations.

Clearly Stated Objectives

Most teachers know enough about pupil and community needs to have a rather clear idea of what they are trying to accomplish in the schools. Choosing the most effective language to use in a written statement of educational objectives, however, is not an easy task. Unless the educational leadership in the school is skilled in group processes, unless the machinery is set up for thorough discussion and clarification of objectives before any attempt is made to put them down in writing, unless the best talent available on the staff is used in the process of editing and final wording, the written objectives may be too nebulous and obscure to be very useful in guiding practice.

Reasonable Objectives

Curriculum-improvement programs at one time consisted primarily of making long lists of objectives relating to every phase of the work of the school. More recently there has been a tendency to list only those objectives for which suitable activities could be planned and to which the school could make a substantial contribution. The school faculty that lists anything and everything that seems desirable as an objective runs the risk of losing public respect and confidence. It is better to have a modest list of objectives on which the school is actually working than to have an inflated list, half of which is neglected in everyday practice.

Understandable and Acceptable Objectives

Time spent in the preparation of a list of objectives is largely wasted unless there has been considerable discussion, by teachers, pupils, and parents, of the values involved. Objectives accepted from a list prepared by outsiders are likely to have little influence unless they are analyzed by the local staff and accepted as pertinent to the local situation. Lists of objectives prepared by the principal and handed out to teachers are also likely to have very little meaning to those whose work they are supposed to influence.

Individual and Group Needs Reflected in Objectives

This suggestion implies that teachers have to know a great deal about community conditions and needs if they are to be intelligent about the objectives of education. It implies also that they must understand the interests, needs, and abilities of the children with whom they work. Objectives grow out of the needs of individuals living in a given environment. An objective may be a good one from the standpoint of social significance, but unless the children in a specific school are mature enough to understand it and do something about it there is very little to be gained from listing it as an objective. Curriculum making has in the past been too much concerned with the importance of certain bodies of subject matter without taking into account the ability of children to master it or the use they can make of it.

Reasonably Comprehensive Objectives

The objectives of the traditional elementary school were concerned primarily with mental growth. That was excellent as far as it went, but the modern school must be concerned with physical, mental, social, and emotional growth. The objectives of the various school subjects were formerly stated in terms of knowledge and skills; the more recent trend is to state objectives in terms of behavior, attitudes, and appreciations as well as of knowledge and skills.

Unity and Consistency of Objectives

The objectives listed should not lead in opposite directions; they should reflect a common philosophy arrived at through cooperative study and discussion by the entire school staff, pupils, and parents.

Objectives Susceptible of Evaluation

Objectives, activities, and procedures for evaluating progress should be considered together. It does very little good to list an objective unless activities for achieving it and procedures for evaluating progress are also considered.

CHANGING OBJECTIVES OF EDUCATION

As with statements of the objectives of elementary education, there is nothing permanent about even the most recent statement, that issued by the Mid-Century Committee on Outcomes in Elementary Education to which reference has already been made. The areas of concern for the elementary school will probably remain stable for some time: physical development; social and emotional development; ethical behavior; social relations; the social world; the physical world; esthetic development; communications; quantitative relationships. These may be stated in different terms; the reader may see social relations, for example, as belonging logically with social development. Indeed, social, emotional, and moral development might well be considered together since the interrelationships among these three areas are so extensive. But basically the areas of concern will probably be those stated by the Committee until radical changes occur in our society.

In fact, if the reader will look back at the earlier statements of objectives (pp. 116–120), he will see that the basic areas of concern have not changed greatly since the seven cardinal principles of education were outlined in 1918. What has changed, however, is the emphasis upon certain problems under each area, rather than upon others. In the matter of health, for example, the needs of the American people have changed greatly in the past forty years. Overweight—even among children—is more of a problem than it was earlier. Americans eat more sweets than they used to, with consequent effects upon teeth. We get less exercise. The incidence of mental illness has increased alarmingly. These changes have brought about appropriate changes in the content of the health curriculum.

The teaching of science in the elementary school is not new, but some of the present emphases in science curriculums are of recent origin. Formerly science was nature study; children learned to identify common birds, flowers, trees, and insects and learned something about their life history. The child of the Space Age needs physics and chemistry as well as botany and ento-

mology. He studies about simple machines and why airplanes fly and how a jet plane differs from a conventional one.

In the area of the social world, too, we can find societal changes that are reflected or should be reflected in statements of objectives. The Eskimo is no longer the primitive tribe once described in textbooks; as Alaska, our forty-ninth state, has become increasingly important to our national defense, its population has expanded, schools have increased, and the life of the modern Eskimo who works for one of our government agencies is not too different from that of other Americans. An objective that states that the child studies the Eskimo "to appreciate how he adjusts to living in the cold Northland" is out of date. So is a statement of objectives for the social studies in the elementary school that fails to include objectives for grades five to eight with respect to the peoples of Africa, the Arab world, the Communist world, and India. Statements of objectives must continually be reappraised in the light of changing conditions in the modern world.

Additions to content or changes in emphasis are not difficult to spot in statements of objectives. There are some changes, however, that are more subtle. These concern *what* the child is to learn as he studies planets, air pressure, fractions, colonial life, the Indians, or the Union of South Africa. Knowledge of specific facts was the outcome in traditional schools, but today more is required of the learner. He must still know many facts, but not as isolated bits of information; he is expected to use these facts to build principles and generalizations. It is not enough to know that Mars is the planet most like the earth; he must also know that because Mars is most like us there is more likelihood of life being present on that planet than on others. It is not enough to know that in the fraction, three fourths, "three" is called the numerator and "fourths" the denominator. The child must understand the relationship between the two. In phrasing educational objectives, teacher groups should be sure that the statement of desired outcomes goes beyond the learning of specific facts.

Modern statements of objectives should also emphasize that intellectual skills are as important to content as the acquisition of knowledge. Development of these skills depends to a considerable extent upon the process by which the child learns. Does he memorize the addition facts and rules for reducing fractions to lowest terms, or does he discover these for himself? Is he learning to recognize words and to read with speed and comprehension, or is he also learning to be a critical reader? Does he learn science principles by reading a text or does he discover these through a problem-solving process? The development of a healthy curiosity, the habit of hypothesizing and then seeking evidence to test hypotheses, of weighing evidence, of reserving judgment until the evidence is in, of giving up one's cherished notions when confronted with sufficient evidence that they are false—these and other intellec-

tual skills must receive recognition in modern statements of objectives for these are important skills in the world in which we live.

Teacher groups, then, in drawing up a statement of objectives must be sure that the objectives meet the demands of today's world. But teacher groups must also be prepared periodically to examine and revise such statements as fresh insights reveal the inadequacy of certain objectives. In the area of social development, for example, some statements of objectives have so emphasized the importance of adjusting to the peer group that development of individuality was slighted. Now the pendulum is swinging the other way as observers of the American scene point out that overemphasis upon adjustment to the group may have adverse effects upon creativity. This reassessment should be reflected in statements of objectives. Critical and continuous reappraisal of statements of objectives is vital to a good school program.

AN ILLUSTRATIVE STATEMENT OF GUIDING PRINCIPLES

Whether the written statement that results from the cooperative study of educational values is called objectives, point of view, philosophy, or guiding principles for the school program is not important. The important thing is that the school program has been examined in the light of certain facts and values, and that the staff, through group discussion, group planning, and group action, has arrived at a set of guiding principles which will give direction to the school program at all levels and in all areas. The following list of guiding principles illustrates the types of statements that might grow out of such a process. Similar statements might be developed by the sttaff of any school system and used as a basis for making more specific and detailed statements in terms of desirable behavior traits of pupils and the types of experiences needed to develop such traits.

1. *The curriculum is regarded as all the experiences of the child for which the school assumes responsibility.* The content to be taught is important, but the curriculum includes more than this. It includes a teacher–pupil relationship, the provision of opportunities for pupil participation in group activities, the school assemblies, the use of the local environment in learning—in short, it includes the whole life and program of the school.

2. *What is happening to the child represents the final criterion for all school practices.* This principle implies that every aspect of the elementary school program will be developed with due consideration for the lessons learned from studies of child development. It implies that an effort will be made to adjust school work to the abilities, interests, and needs of children at all levels. What arithmetic does to Johnny is more important than what Johnny does in arithmetic.

3. *The school program should orient the child in the life about him.* The program of the school should be closely related to the problems of living in the local community, and local resources should be utilized as learning experiences. This procedure results in a community-centered school program. It involves an analysis of the local community as a basis for curriculum planning.

4. *The school program should provide experiences in cooperative group living.* A democratic society demands that people work together on projects for the common welfare. The school, therefore, must provide opportunities for children to work together, to plan together, to execute, and to evaluate. If the school is to develop cooperative individuals, it must provide opportunities for cooperative group living.

5. *The school program should provide a balanced day of living for children.* The daily class schedule should make provisions for direct teaching of subjects and for experience units based on important aspects of living. The daily class schedule must provide for both group experiences and individual experiences.

6. *The school program should provide opportunities for the development of the creative abilities of children.* School life, as well as life outside of school, must of necessity involve a certain amount of conformity. However, modern society is in great need of creative individuals. Society's progress depends upon individuals with imagination, originality, and initiative. The school program must help the child to discover and develop his creative abilities.

7. *The school program must provide for the development of the fundamental skills.* Effective learning in present-day society requires the ability to read effectively, to use correct language in written and oral expression, and to perform mathematical operations accurately. These and many other skills are not adequately dealt with in a program consisting exclusively of experience units. It is necessary, therefore, to have a program of direct teaching of subjects to provide for continuous growth in these areas.

8. *Curriculum improvement begins in the thinking of teachers.* In county systems as well as in town and city systems, workshops, study groups, and professional-growth agencies must be used continually.

9. *The school program should be based on continuous planning.* Continuous planning by administrators, teachers, and parents is essential if the elementary-school program is to keep in step with the needs of children in a rapidly changing world.

10. *The evaluation program should be comprehensive, continuous, and cooperative.* Comprehensive evaluation means that physical, social, and emotional growth as well as mental growth should be evaluated. Continuous evaluation implies that evaluation is an integral part of the teaching-learning situation—it goes on all the time instead of merely at stated intervals. Cooperative evaluation means that pupils gain experience in evaluating their own efforts instead of leaving all the evaluating to be done by the teacher. Methods

of evaluation should be used which furnish opportunity for a maximum of self-direction, self-appraisal, and self-control. They should develop respect for work well done.

SUMMARY

1. Members of the teaching profession have a special obligation for helping laymen understand and appreciate the true purposes of elementary education in American democracy.

2. The objectives of education at any level are identical with the general objectives of education in American democracy.

3. Educational objectives state the directions in which it is desirable for growth to take place.

4. Each teacher builds his own philosophy from his knowledge of the characteristics and needs of children and the realities and ideals of the society in which the school exists.

5. The teacher who has no vision of the results of his work in terms of richer lives for individuals and a better America of tomorrow will merely be engaged in a monotonous round of details.

6. The objectives of the modern elementary school are broader and more closely related to life than those of the traditional school.

7. The proposition that education is always a function of time, place, and circumstance is supported by an examination of educational objectives, both stated and implied, over a period of several years.

8. Formulating a written statement of the philosophy of the school after a period of study and exploration serves a useful purpose in giving the members of the staff a feeling of accomplishment and a sense of direction.

9. The study of educational objectives can best be initiated by having teachers list problems that come up naturally in the course of a few weeks or months in connection with their teaching.

10. The written statement of objectives of the school should (a) be clearly stated, (b) be limited to those objectives that the school has a reasonable chance of achieving, (c) be understood and accepted by teachers, pupils, and parents, (d) reflect social need as well as pupil ability and interest, (e) have unity and internal consistency, and (f) be susceptible of evaluation.

SELECTED READINGS

Bloom, Benjamin S. (Ed.), *Taxonomy of Educational Objectives: The Classification of Educational Goals.* New York: David McKay Company, Inc., 1956. This book is intended to help curriculum workers discuss objectives and evaluation in more precise terms, and to help teachers identify objectives in a manner that makes it easier to plan learning experiences and prepare evaluation devices.

Caswell, Hollis L., and Doak S. Campbell, *Curriculum Development*. New York: American Book Company, 1935. Chapter 2 explains the responsibility of the school for helping to achieve social ideals, emphasizes the importance of defining social ideals, and points out the relationship between social ideals and the school curriculum.

Educational Policies Commission, *The Central Purpose of American Education*. Washington, D.C.: National Education Association, 1961. Explains that the American people have always regarded education as a means of improving themselves and their society and states that the purpose which runs through and strengthens all other educational purposes—the common thread of education—is the development of the ability to think.

————, *The Purposes of Education in American Democracy*. Washington, D.C.: National Education Association, 1938. Explains how educational objectives are determined, reviews outstanding statements of objectives, and presents a new classification of objectives.

Heffernan, Helen, "Goals for Education," *Childhood Education*, September 1961, pp. 4–9. Explains the significance for the teacher of the goals enunciated by the President's Commission on National Goals.

Jessup, John K., and others, *The National Purpose*. New York: Holt, Rinehart and Winston, Inc., 1960. Contains articles on the national purpose written by ten distinguished Americans.

President's Commission on National Goals, *Goals for Americans*. Englewood Cliffs, N.J.: Prentice-Hall, Inc., 1960. Presents a program of action for the 1960s in terms of basic goals.

Project on the Instructional Program of the Public Schools, *Deciding What to Teach*. Washington, D.C.: National Education Association, 1963. Chapter 4 explains the factors that contributed to broader goals of the school program and recommends five educational objectives.

Sowards, G. Wesley, and Mary-Margaret Scobey, *The Changing Curriculum and the Elementary Teacher*. Belmont, Calif.: Wadsworth Publishing Company, Inc., 1961. Chapter 3 explains the relationship between educational goals and national policy; emphasizes the role of objectives at the classroom level.

SELECTED FILMS

Defining Democracy. An eighteen-minute sound film explaining how to recognize democracy and guard it against the growth of despotic ideas; communities rated on a democracy-despotism scale of shared respect and shared power; importance of enlightenment and economic balance to achieve democracy. (Encyclopaedia Britannica Films)

Practicing Democracy in the Classroom. A two-reel sound film that shows how future citizens of America can develop attitudes and habits of behavior that will determine the way they will discharge responsibilities as adult citizens of a democracy. (Encyclopaedia Britannica Films)

Secure the Blessings. A thirty-minute sound film explaining the role of the school in our society. (National Education Association)

Problems and Projects

1. Under both Fascism and Communism, the schools have been effectively used to develop in children the values and motivations demanded by the kind of society in which they were growing up. Not only was the content of the curriculum employed for this purpose, particularly in such subjects as history, economics, and literature, but also methods of discipline were designed to mold young characters for their society. In fact, as the astute observer of Soviet education quoted below has pointed out, Communist authorities view as the primary objective of education not the learning of subject matter, but the development of what they call "social morality." To that end, leaders of Communist education have developed extremely effective methods of character education. The guiding principles of these methods as analyzed by Bronfenbrenner are as follows: [See Urie Bronfenbrenner, "Soviet Methods of Character Education," in Celia B. Stendler (Ed.), Readings in Child Behavior and Development (New York: Harcourt, Brace & World, Inc., 1964.]

   a. The peer collective (under adult leadership) rivals and early surpasses the family as the principal agent of socialization.
   b. Competition between groups is utilized as the principal mechanism for motivating achievement of behavior norms.
   c. The behavior of the individual is evaluated primarily in terms of its relevance to the goals and achievements of the collective.
   d. Rewards and punishments are frequently given on a group basis; that is to say, the entire group benefits or suffers as a consequence of the conduct of individual members.
   e. As soon as possible, the tasks of evaluating the behavior of individuals and of dispensing rewards and sanctions is delegated to the members of the collective.
   f. The principal methods of social control are public recognition and public criticism, with explicit training and practice being given in these activities. Specifically, each member of the collective is encouraged to observe deviant behavior by his fellows and is given opportunity to report his observations to the group. Reporting on one's peers is esteemed and rewarded as a civic duty.
   g. Group criticism becomes the vehicle for training in self-criticism in the presence of one's peers. Such public self-criticism is regarded as a powerful mechanism for maintaining the enhancing commitment to approved standards of behavior, as well as the method of choice for bringing deviants back into line.

What moral attitudes would practices built upon these principles develop? What would the product look like?

2. Read Bronfenbrenner's paper in its entirety for examples of the principles quoted above. Then read J. Henry, "Attitude Organization in Elementary Classrooms, American Journal of Orthopsychiatry (1957), Vol. 27, pp. 117–133. Is there any similarity in American and Soviet methods? Cite examples from the two papers you have read, and from your classroom observations.

3. The average teacher finds it very difficult to adjust his expectations to the fact of individual differences in achievement and conduct. After decades of emphasis in teacher education, we see progress with respect to the former, in the recognition of the fact that not all pupils at a given grade level should be exposed to the same learning experiences. However, a noted Negro sociologist, Kenneth Clark, takes the position that the doctrine of individual standards condemns some Negro children to a second-class education. The expectation that not all pupils in a fifth grade will do fifth-grade work becomes translated in the teacher's mind to the expectation that her pupils will never be able to do fifth-grade work in the course of that school year. The teacher lowers her sights accordingly with the result that pupils from disadvantaged homes are not provided with a curriculum to compensate for cultural deficits; they are simply provided with the standard curriculum of an earlier grade.

Is Kenneth Clark right? Should the disadvantaged have the standard curriculum for their grade level? For insight in answering, read C. Silberman, Crisis in Black and White (New York: Random House, Inc., 1964) Chapter 9.

4. If the concept of individual standards of achievement has been hard to realize, acceptance of individual standards of conduct under certain circumstances has been even more difficult to achieve. Teachers, like parents and other adults in our society, give lip service to expression of individuality, but believe that treating people fairly means treating all alike. How often has the reader heard someone say in response to a request for individual treatment, "If I do it for one, then I have to do it for everyone." And, "If I let one get away with it, all the others think that they have the same right."

Here are some classroom situations involving the issue of allowance for individual differences in behavior. Describe how you would deal with each situation and why.

    a. Kindergarten children complain, "You told us to put everything away and Darlene still has a pocketbook from the doll corner with her."

    b. It is time to collect books and change classes. Larry hasn't finished his work. He complains. The teacher reminds him of the limits of time. He slams the book closed and almost hurls it at the person collecting. That pupil complains.

    c. The children have gathered around the piano for music. Sonia continues to work at her seat. Several children comment on it.

PART II

Curriculum
Organization

Figure text:

Grouping Children
in the
Elementary School

Leadership for
Curriculum
Improvement

CURRICULUM

ORGANIZATION

Organizing
Learning
Experiences

Organizing
the Class for
Living and Learning
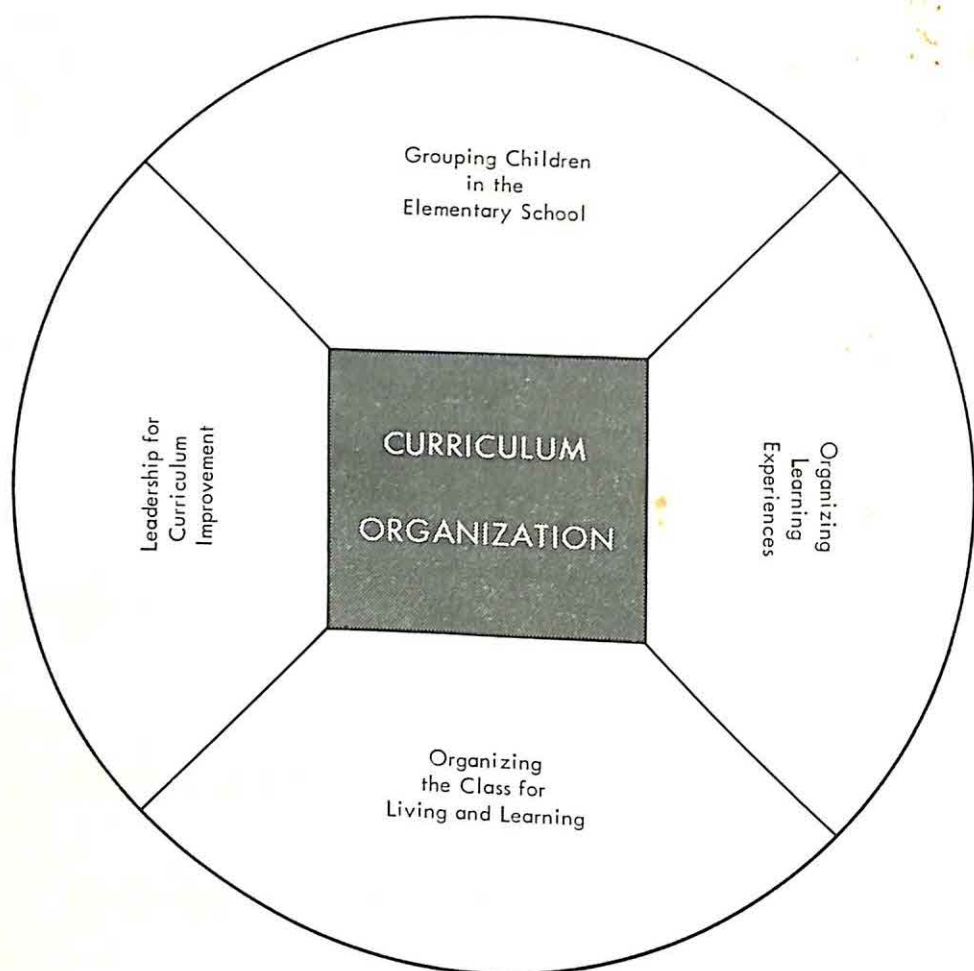
There are several facets to the problem of elementary school organization. Part II deals with four of these facets: grouping children in the elementary school, organizing learning experiences or developing the design of the curriculum, organizing the class for living and learning, and the role of educational leadership in curriculum improvement. As the illustration indicates, the ultimate goal of these activities is to make more effective use of the time and talents of teachers and pupils.

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Grouping Children
in the Elementary School

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From many parts of the country come reports of
ways in which schools are trying to improve the
quality of their educational programs by bringing
organizational patterns into closer alignment with
goals and activities.
—Mary Dawson (Ed.), *Elementary School
Organization* (Washington, D.C.: National
Elementary Principal, 1961), p. 4.

The effort to provide educational opportunities for all American children
has carried with it the necessity of forming groups for instructional purposes.
The fact that recent decades have witnessed the emergence of many new plans
for forming instructional groups has tended to obscure the fact that every
generation of American educators has struggled with the problem. When the
monitorial system was established in this country about 1818, Joseph Lan-
caster was acclaimed as the benefactor of the human race. When the first
graded elementary school in America was established in the Quincy School
in Boston in 1848, its emphasis on uniform grade standards and its simplicity
of operation caused it to spread throughout the nation as the prevailing type
of elementary school organization.

Weaknesses of the graded school plan, however, soon became apparent:
increasing numbers of nonpromotions, brighter pupils who were unchallenged
by the standard curriculum, and an increasing number of drop-outs in the
upper grades. The schools in Saint Louis adopted a quarterly promotion plan
in 1862, hoping to break the lock step and the Pueblo plan was adopted in
1888 to permit the formation of instructional groups on the basis of ability.
During the last decade of the nineteenth century, the Cambridge plan, the
Elizabeth plan, the Portland plan, the North Denver plan, and the Santa
Barbara plan made their appearance as innovations intended to correct the
faults of the graded school system.

The history of education in the United States is replete with the names
of famous plans for permitting pupils to progress at different rates through

a standardized body of content; the first three decades of the twentieth century provided a number of these innovations. The Gary plan, initiated in 1908 by William A. Wirt, was one of the most highly publicized as well as one of the most frequently imitated. A pamphlet has been preserved which gives in Wirt's own words his reasons for establishing the *Work-Study-Play School*.[1] This record reveals that his objectives included a great deal more than the installation of the platoon type of elementary school organization; his stated objective was "making the city a good place for rearing children." Accordingly, he wanted the Gary School to be a child's world and a people's club house; he wanted a longer school day and a longer school week; and he wanted all child welfare facilities merged with the school program. Schools throughout the country, however, adopted the platoon type of elementary school organization without including the other features of the original Gary plan. Pupils were divided into two groups or platoons. While one group met in regular classrooms to study the fundamental subjects, the other group met in the auditorium, the gymnasium, and other special rooms to engage in various activities. One reason for the popularity of the plan was that it provided for a more economical use of the school plant. Other well known plans developed during the first three decades of the twentieth century included the Dalton plan, the Winnetka plan, and the cooperative group plan. Descriptions of these plans are available from too many sources to require repetition here. They are mentioned here only to indicate that dissatisfaction with the graded school has existed for many years.

CURRENT PRACTICES IN GROUPING PUPILS

The innovations in grouping practices previously mentioned belong to the study of the history of education. Although greatly altered versions of these plans can be found in elementary schools today, the descriptions of grouping practices that appear in the literature of this era carry different labels, operate in a different setting, and to some extent are designed to serve other purposes than merely escorting pupils through a standard body of content at different rates. It is an oversimplification, for example, to attempt to equate the modern nongraded elementary school with the ungraded one-room rural school of 1900.

It has been stated that the decade of the 1950s "saw a greater ferment in education than any previous decade, except perhaps the thirties when the progressive education movement was most virile." [2] Much of the ferment in

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[1] William A. Wirt, *The Great Lockout in America's Citizenship Plants* (printed by students of Horace Mann School, 1937).
[2] Celia B. Stendler, "Grouping Practices," in National Elementary Principal, *Those First Years at School* (Washington, D.C.: National Education Association, 1960), pp. 147–148.

elementary education has centered around the grouping of pupils for instructional purposes. The new books that have been published and the amount of space that has been used in educational journals indicate interest in grouping practices has been sustained into the decade of the 1960s. Indeed, a 1962 publication listed thirty-five approaches to grouping that had been developed and discarded, modified, or made a part of common practice.[3] This chapter is limited to a discussion of only a few of the most widely discussed plans. Information concerning the other practices is readily available in educational journals and books.

The Nongraded Elementary School

The graded elementary school grew out of conditions existing in the nineteenth century, when public school systems were being established in this country. The necessity of dividing children into groups for instructional purposes, the relative simplicity of giving a single assignment to an entire class, the scarcity of instructional materials, the development of carefully graded textbooks, the necessity of maintaining large classes, the low level of teacher preparation, and the factorylike precision that seemed to be present in a sharply graded school system were some of the factors that contributed to its establishment. Once established, it soon became a device for the regimentation of children—for subjecting slow learners to pressures to meet grade standards and for encouraging the brighter ones to settle for a slower rate of learning than the one that their ability would justify.

Protests against this lock-step system began before the beginning of this century; President Charles W. Eliot of Harvard University advocated instruction addressed to the individual as early as 1892. Three developments since the turn of the century have been particularly influential in creating dissatisfaction with the graded system. One of these has been the increasing amount of information about the wide differences that exist among children in any given grade in school. Pupils entering the first grade generally differ in mental age by approximately four years; by the time children reach the sixth grade the spread amounts to five or six years. This means that the first-grade teacher must work with some pupils who are not ready for the work laid out for the first grade and with others who are ready for work that is pitched a grade level or two above the first grade; and this means that the sixth-grade teacher must work with pupils who differ even more widely in ability to perform school tasks. The second development has been the increasing acceptance by school people of the philosophy of continuous growth, which holds that each child should be assisted in growing according to his natural pattern, without depriving the bright child of the opportunity to learn as much as his ability and

[3] Harold G. Shane, "The School and Individual Differences," in National Society for the Study of Education, *Individualizing Instruction* (Chicago: University of Chicago Press, 1962), pp. 48–49.

effort permit and without trying to force the slow learning child to live up to standards that were never intended for him. The third development may be called the "quest for excellence"—the emphasis on efforts to identify our gifted children and to help them make the most of their talents. The ferment in elementary education since 1950 centered around efforts to develop various types of continuous progress programs; the nongraded elementary school was one of the most widely discussed of these programs. The information concerning the number of elementary schools that are actually using the nongraded plan is meager. One study, which reported on a small sample of a little over 600 out of a total of 85,000 public elementary schools in the nation, indicated that 6 percent were using some nongraded sequences in 1956 and that 12 percent were doing so in 1961. Twenty-six percent of the principals reporting said they looked for such programs to be in use by 1966.[4]

BASIC FEATURES OF THE NONGRADED PLAN   Although programs vary from one school to another, some basic features are common to most of them:

1. Annual promotions are eliminated; the content of the curriculum for the first three years in school is divided into eight or nine sequential levels; and pupils progress from one level to the next in terms of their ability and rate of learning.

2. Most pupils remain in the primary unit three years, but a few may complete the work in two years and a few may require four years to complete it.

3. In some schools, pupils who complete the work of the primary unit go into another unit called the intermediate unit, which is also ungraded.

4. Progress levels are frequently geared to reading achievement.

5. The plan involves an extensive use of tests and other evaluation procedures to determine when a pupil has completed one of the levels.

6. Schools using the plan generally form instructional groups consisting of pupils who do not vary more than two progress levels in achievement.

7. Pupils can move up or down easily within their classrooms and transfers to other levels in other classrooms can be made at any time.

ADVANTAGES CLAIMED FOR THE NONGRADED PLAN

1. Each child is accepted at his maturity level and is helped to grow as fast as his rate of development permits.

2. The plan requires teachers to be very explicit about objectives, materials, and procedures; this should lead to more thorough mastery of the fundamentals.

3. The plan helps to meet the emotional needs of the child, for he is not forced into learning activities before he is ready.

[4] Project on the Instructional Program of the Public Schools, *The Principals Look at the Schools* (Washington, D.C. National Education Association, 1962), Preface and pp. 39–40.

4. There is less boredom, loss of interest, and misbehavior on the part of pupils who are not challenged by the work in a graded system.

5. The plan promotes more cooperative planning on the part of teachers.

6. The child begins in September where he left off in June; he does not repeat that part of the work which he has completed.

7. The plan requires that teachers establish closer working relationships with parents because reporting to parents is neither as simple nor as well known as it is in the graded school.

LIMITATIONS OF THE NONGRADED PLAN

1. It is not a method of teaching; it is an administrative device. No plan of grouping pupils can produce excellent results without competent teachers; no plan can relieve the teacher of the obligation of studying individual pupils and of making every effort to provide instruction and guidance that is geared to individual needs and abilities. The nongraded plan does not give the teacher a group of pupils who are alike in every respect; it gives the teacher a group of pupils who are more nearly alike than pupils in a conventional grade with respect to one factor: rate of learning. The plan is not a panacea; it is a step in the right direction.

2. The plan could result in a lack of balance in the curriculum. If completing the levels in the primary unit consists primarily of mastering the basic skills in language, reading, and arithmetic, other subjects such as the social studies, health, science, music, and art may suffer. Teachers may be tempted to "teach for tests" and to neglect those subjects that are not included in the levels plan.

3. The plan may limit opportunities for learning. Some learnings are needed by all pupils; others are unique to the individual. A child may need room to learn some things which only he will be able to or want to learn. The rate-centered approach that is used in the nongraded plan presupposes an identical sequence of content for every pupil; the only difference among pupils that is recognized is how quickly they can move through a preplanned, prescribed sequence of content and skill.

4. The preplanning of content for each level tends to limit the range of materials used and to deprive pupils of opportunities for participating in the selection of materials and the planning of learning experiences.

5. Difficulties may be encountered when pupils from a nongraded elementary school move into a graded junior high school.

6. Parents are conditioned to reporting practices based on the graded-school concept; a great deal of time and effort is required to help them understand reporting practices based on the ungraded concept.

7. Teachers in nongraded schools must devote a great deal of time to constructing and using tests and other evaluative procedures to determine when a pupil has completed one level and is ready to begin another.

8. Unless administrators, teachers, and parents spend a great deal of time in planning the program, the nongraded plan may result in the substitution of a new form of regimentation of pupils for an old, familiar one.

Multigrade and Multiage Grouping

Current proposals for forming instructional groups have at least one objective in common: to reduce the degree of regimentation that has characterized the graded elementary school. The structure proposed for achieving this objective, however, varies from one plan to another. The nongraded plan is based on the assumption that more learning takes place when pupils of similar achievement are placed in the same classroom; multigrade grouping, on the other hand, emphasizes the advantages of placing in the same classroom pupils with wide differences in age and grade levels.

Information concerning this plan is not nearly as plentiful as that relating to the nongraded plan, but some information can be found in educational journals. The authors of one article, which describes an experiment carried on in the Barstow and Torrance (California) schools, state, "The findings of the study support the broad hypothesis that grouping patterns should be based upon differences among children, rather than upon similarities." [5] The experiment involved placing in each of seven classrooms an approximately equal number of pupils from grades one, two, and three or from grades four, five, and six. The pupils in each of these classrooms varied three or four years in age. Comparisons were made between these multigrade classes and single-grade classes in terms of achievement, personal and social adjustment, behavior, and teacher–pupil–parent reactions. Like other innovations in elementary school practice, the success of this plan depends upon understanding and acceptance of the plan by administrators, teachers, and parents; upon the availability of an abundance and variety of materials; and upon alert, intelligent leadership from the central office.

ADVANTAGES CLAIMED FOR MULTIGRADE AND MULTIAGE GROUPING

1. A classroom group in which wide differences in age and grade levels exists more nearly resembles groups outside the school; in both instances individuals learn from those who are different from themselves as well as from those who are similar.

2. The pupil who goes through an elementary school organized in this way will be a member of the younger portion of the group one year; a member of the middle age group one year; and a member of the older age group one year.

3. There is some evidence, from experimentation in two school systems,

[5] Walter Rehwoldt and Warren Hamilton, "Why Group by Grade Level?," *Grade Teacher*, January 1959, p. 18. See also Warren Hamilton and Walter Rehwoldt, "By Their Differences They Learn," *National Elementary Principal*, December 1957, pp. 27–29.

that the academic achievement of pupils in multigrade classes is greater than that of pupils in single-grade classrooms.

4. There is evidence that pupils in multigrade classrooms make greater gains in personal adjustment, social adjustment, and in favorable attitudes toward school than do pupils in single-grade classrooms.

5. It is not feasible for the teacher in a multigrade classroom to set up a common goal for every pupil, to assign the same lesson for all pupils, or to use the same textbooks for all pupils; individualized instruction is, therefore, a necessity.

6. Parents strongly supported the multigrade plan after having their children in the program for one year.

7. Teachers and administrators in the schools where the experiments were conducted favored the multigrade plan of grouping.

8. When several multigrade classes are established at both the primary- and the intermediate-grade levels, it is feasible to transfer pupils from one classroom to another in the interest of better teacher–pupil and pupil–group adjustment.

LIMITATIONS OF MULTIGRADE AND MULTIAGE GROUPING

1. The plan tends to perpetuate the use of grade labels at a time when these labels are known to have little meaning.

2. It is not necessary to place pupils from three different grade levels in the same classroom in order for them to learn to live with others who are more mature or less mature than themselves; opportunities for this exist in the home, in the neighborhood, on the playground, in the cafeteria, and elsewhere.

3. The differences among pupils are great enough when a single grade is assigned to a classroom.

4. No administrative device can assign pupils to a classroom so that each pupil will receive instruction suited to his educational level; only good teachers can do this.

5. Although this plan of grouping seems to have produced good results in some schools, there is little reason to believe that it would achieve the same results in all schools.

6. Since circumstances vary from one attendance unit to another in a large school system, the blanket application of one plan of grouping to all schools in the system may serve as a straitjacket, making it more difficult to achieve the objectives of education.

The Dual Progress Plan

This plan of forming instructional groups, like the other two discussed, is motivated by a desire to make better provision for the differences in ability found in children at any age or grade level, the desire to permit each child

to perform at his highest potential level. The dual progress plan differs from these two previous plans, however, in several important respects. The plan, as presented by Stoddard and tried out in selected Eastern school systems, divides the subjects taught in the elementary school into two groups called "cultural imperatives" and "cultural electives." Pupils above the third grade spend a half day with a home-room teacher studying the cultural imperatives— language arts, social studies, health and physical education. They spend the other half of the school day with special teachers studying the cultural electives —mathematics, science, art, music, and foreign language. As the name of the plan implies, a dual system of regulating pupil progress is employed; pupils progress through a graded sequence in the cultural imperatives and through an ungraded sequence in the cultural electives. Thus, a pupil who has exceptional talent in science may move rapidly through the sequential levels in that subject while staying in his particular home room in which grouping is based on "all-round maturity."

Like the original Gary plan, this plan goes far beyond presenting a procedure for assigning pupils to groups for instructional purposes. Indeed, the subtitle of Stoddard's book is *A New Philosophy and Program in Elementary Education*.[6] Moreover, the book explores new approaches to subject matter, teaching methods, and the education of teachers.

ADVANTAGES CLAIMED FOR THE DUAL PROGRESS PLAN

1. It extends downward into the elementary school a modified form of the grouping practice used in junior high schools.

2. Responsibility for counseling is assigned to the home-room teacher, who has an opportunity to know each pupil, his family, and his neighborhood well.

3. The pupil spends enough time with one teacher to develop a feeling of belonging to a group; the individual is not lost in the shuffle of classes as may be the case in a departmentalized system.

4. The home-room teacher has an opportunity to help pupils see the interrelationship between the language arts and the social studies.

5. There is a closer relationship between teacher competence and teacher assignment: Teachers who hate mathematics are not called upon to teach it; those who are interested and well prepared in the subject can provide a higher quality of instruction.

6. Pupils have an opportunity to become acquainted with several teachers, each of whom differs in method and personality.

7. The opportunity to specialize in the teaching of one area may attract more capable teachers to the elementary school.

[6] George D. Stoddard, *The Dual Progress Plan: A New Philosophy and Program in Elementary Education* (New York: Harper & Row, Publishers, 1961).

8. Pupils who possess special interests and talents in one area may progress more rapidly in that area than they could in a graded school.

9. Special teachers offer work on a longitudinal basis throughout the elementary school; they are in a good position to identify pupils with exceptional talents and to guide their development over a period of years.

LIMITATIONS OF THE DUAL PROGRESS PLAN

1. The rationale for designating certain school subjects as cultural imperatives and others as cultural electives is confusing. It is not difficult to make a case for language arts, social studies, and health as cultural imperatives; it is more difficult to understand why mathematics and science are not also cultural imperatives.

2. The plan does not provide for continuous progress, since pupils who do not meet the grade standards in the graded portion of the plan may be required to repeat the work of the entire grade.

3. Specialists in mathematics and science are in such great demand outside the school that it would be difficult to staff elementary schools with specialists in these fields.

4. It is difficult for the special teachers in the nongraded portion of the plan to come to know each pupil well; parents must consult several teachers to learn about pupil progress; and pupils must move from one class to another about every forty minutes.

5. Teacher specialists in the nongraded portion of the plan must devote a great deal of time to planning content and activities to be included in each sequential level and to constructive tests to determine when a pupil is ready to move from one level to the next.

6. The preplanning of content for each level may deprive pupils of the experience of discovering useful materials and of exercising initiative in planning learning activities.

The Self-contained Classroom

The proponents of the self-contained classroom, like those of the other plans discussed, emphasize the need for planning for individual differences. A pamphlet devoted entirely to a discussion of the advantages of this plan states that the self-contained classroom "develops a climate of learning which encourages, stimulates and guides boys and girls according to their individual abilities and interests." [7] This plan, however, is unique among the plans discussed in this chapter in that it represents prevailing practice, whereas the others represent proposals for change; proponents of the self-contained-classroom plan, therefore, urge that those who are considering reorganization examine the plan carefully in order to be fully aware of what they are changing.

[7] Association for Supervision and Curriculum Development, *The Self-contained Classroom* (Washington, D.C.: The Association, 1960), p. 1.

The self-contained classroom has for some time been the most widely used plan for forming groups for instructional purposes in the elementary school.

Critics of the self-contained classroom have been increasing in numbers for several years. They generally describe it at its worst: as an organization in which special teachers cannot be used; as a classroom in which the teacher and a group of pupils are cut off from association with other teachers and pupils; as a classroom in which instruction is addressed to the class as a whole; and as a classroom in which little consideration is shown for pupils with high or low ability, since instruction is aimed at pupils with "average" ability. Proponents of the plan, on the other hand, tend to describe the self-contained classroom at its best. It may be well to repeat in this connection the statement that no plan of organization can, of itself, improve instruction; the most that it can accomplish is to provide a framework in which the imaginative can teach as well as they are capable of teaching.

ADVANTAGES CLAIMED FOR THE SELF-CONTAINED CLASSROOM

1. The self-contained classroom calls for placing a group of pupils with a teacher for the major portion of a school day. This enables the teacher to learn a great deal about each pupil through long association and through seeing him in a wide variety of learning situations.

2. The teacher in the self-contained classroom is in a good position to help pupils understand the interrelatedness of subject-matter fields.

3. Pupils in a self-contained classroom have more opportunities for learning to participate effectively in group enterprises; they stay with the same group, under the guidance of the same teacher, for a major portion of the school day.

4. The self-contained classroom permits a more flexible use of time; significant learning experiences are not brought to an abrupt end because pupils must go to another class. It is easier to schedule field trips and other experiences that involve more than one period in the daily schedule.

5. Although sound subject-matter knowledge is important for elementary teachers, other competencies, such as understanding of child growth and development and ability to organize learning experiences, are also important. The scope and depth of subjects taught in elementary schools are not so great that they cannot be acquired by regular classroom teachers.

6. The self-contained-classroom plan can be modified to permit the use of consultants to work with classroom teachers and to permit teachers who are weak in certain fields to exchange classes with other teachers.

LIMITATIONS OF THE SELF-CONTAINED CLASSROOM

1. The need for greater achievement in basic subjects calls for greater depth of preparation on the part of the teacher than teachers in self-contained classrooms generally have.

2. Critics of the self-contained classroom maintain that pupils need experiences with many teachers.

3. Teachers who are not well prepared in all areas may neglect the areas in which they lack competence; this leads to imbalance in the school program.

4. Teachers in self-contained classrooms tend to become isolated from other teachers, rather than working as a member of a team.

Team Teaching

Those who like to find historical precedents for current innovations in educational practices frequently point out that the cooperative group plan, developed by James F. Hosic and his associates in the early 1930s, was a forerunner of the team teaching technique that is receiving a great deal of attention today.[8] The two plans do have certain common characteristics: each teacher works as a member of a group of teachers; one teacher serves as the chairman or leader; each teacher bears certain special responsibilities; and space specifically designed for particular types of activity is essential. The fact that the two plans have common characteristics, however, does not justify an assumption that team teaching is nothing more than a revival of the cooperative group plan of the 1930s.

Team teaching began to receive a great deal of attention in 1957, when the Harvard Graduate School of Education sponsored a program in Franklin School at Lexington, Massachusetts. The experiment was financed from a grant from the Fund for the Advancement of Education. Robert H. Anderson, director of the project, and Francis Keppel, Dean of the Harvard Graduate School of Education, were primarily responsible for getting the program under way. Other programs were soon started at Concord and Newton, Massachusetts "to narrow the gap between research and practice by linking the university with public school systems to make teaching more attractive and effective and to extend the influence of gifted teachers. . . . The time has come," wrote Dean Keppel, "to recognize the difference between those who make a lifetime career in education and those who stay only a few years, or who teach part-time. . . . At present organizational patterns treat all alike." [9]

From this beginning, team teaching has become one of the most widely discussed and frequently adopted educational innovations in recent years. Programs designated as team teaching vary from the cooperative efforts of two teachers to programs involving several staff members, several classes, and a variety of grouping patterns. The principal characteristics of the plan have been stated as follows:

[8] J. F. Hosic, and others, *The Cooperative Group Plan for the Organization of Elementary Schools* (New York: Bureau of Publications, Teachers College, Columbia University, 1931).

[9] Arthur D. Morse, *Schools of Tomorrow—Today* (New York: Doubleday & Company, Inc., 1960), pp. 21–22.

Basically, team teaching is an arrangement that provides for having two or more teachers, with abilities and skills that complement each other, assume joint responsibility for directing the learning activities of a group of students. Together, the members of the team take charge of planning lessons, developing appropriate methods and materials, and teaching and evaluating a program of studies for their student group.[10]

A study mentioned earlier in this chapter indicates that team teaching in elementary schools has been increasing: 5 percent of the schools used in the study were using the plan in 1955–1956, 15 percent were using it in 1960–1961, and 30 percent expected to be using it in 1965–1966.[11] As the number of schools using the plan has increased, many patterns of organization and operation have emerged. Most of the plans provide for large-group learning situations, small-group learning situations, and opportunity for pupils to work alone on individual projects. One plan uses three teachers and a clerical aide for seventy-five pupils at one grade level. One teacher is designated as *team leader* and is paid an additional sum for this responsibility; the other two are *cooperating teachers.* Another version, used in a university campus school, has an experienced teacher who serves as team leader, an inexperienced teacher, two student teachers, and a teacher aide for fifty-five pupils at the second- and third-grade levels. The team leader calls the members together frequently to plan and evaluate the program. The inexperienced member teaches those phases of the program for which he is best prepared. The student teachers have an opportunity to observe more than one teacher, teach certain topics for which they have made special preparation, join in the planning and evaluating of learning activities, and have their performance evaluated by more than one teacher. The teacher aide performs many routine tasks and makes it possible for the professional members of the team to concentrate on more important aspects of teaching. The team leader closes an account of the experiment with the statement: "We have a learner-centered organization where our activities are not hampered as in an egg crate organization."[12]

ADVANTAGES CLAIMED FOR TEAM TEACHING

1. The plan provides for a better utilization of the competencies of superior teachers; more pupils can profit from their teaching and their influence is reflected in the planning of better programs of instruction.

2. Superior teachers can receive increases in salary without leaving the classroom to take administrative positions.

3. The plan facilitates the orientation of new teachers to the school system and to the community.

[10] National Elementary Principal, *Elementary School Organization: Purposes, Patterns, Perspective* (Washington, D.C.: National Education Association, December 1961), p. 115.

[11] Project on the Instructional Program of the Public Schools (1962), p. 18.

[12] Hattie Orr, "UTTO: Ungraded Team Teaching Organization," *Oklahoma Teacher,* December 1963, pp. 6–9.

4. Student teachers gain valuable experience by observing the teaching of more than one teacher and by participating in cooperative planning.

5. Each member of the team has an opportunity to take charge of the phase of the program that he is best prepared to handle.

6. The use of clerical aides and noncertificated personnel relieves teachers of many nonteaching chores.

7. Pupils gain valuable experience by being able to work in large-group learning situations, in small-group learning situations, and as individuals.

8. The plan facilitates a more effective use of space, materials, and equipment.

9. The work of the pupils can go on more effectively when one member of the team is absent because of illness than it does when one teacher is responsible for the entire program.

10. Beginning teachers have a better opportunity for in-service growth than they do when they are isolated in one room.

LIMITATIONS OF TEAM TEACHING

1. The success of the plan depends to a great extent on the ability of members of the team to work together harmoniously; if friction develops in interpersonal relations, the program suffers.

2. Members of the team must spend a great deal of time working on plans for scheduling, for group activities, and for individual projects.

3. The problem of selecting superior teachers to serve as group leaders is a complex one; teachers who are very successful at working with a group of pupils may experience frustration when they are faced with semiadministrative tasks involved in serving as team leaders.

4. Unless the team leader is particularly adept at encouraging new teachers who are members of a team to suggest new materials and procedures, pupils may be deprived of excellent experiences that these teachers could provide, and the initiative and creativity of new teachers may be discouraged.

5. Instruction in the large-group situations tends to be the formal, lecture type of instruction; pupils have little opportunity to ask questions or make contributions.

6. Superior teachers who serve as team leaders have little contact with pupils; the actual instruction that pupils receive comes primarily from teachers with less experience and competence.

7. Team teaching can operate at its highest level of effectiveness only in a building that has been planned and constructed for this purpose.

Departmentalization

It can be argued, of course, that departmentalization applies to the problem of organizing the content of the curriculum rather than to the problem of grouping pupils for instructional purposes; that even in a self-contained

classroom the teacher can arrange curriculum content in rigid compartments or in some more unified manner. On the other hand, departmentalization may be viewed as a plan for grouping pupils that permits the teacher to specialize in the teaching of one or a few subjects, just as the self-contained classroom requires the teacher to be a generalist who teaches all or nearly all the subjects to the pupils in her classroom.

The self-contained-classroom plan prevailed throughout the second half of the nineteenth century; departmentalization spread rapidly after the turn of the century—by 1929 some form of departmentalization existed in 35 percent of the elementary schools surveyed and by 1949 it existed in 51 percent of the schools surveyed. By mid-century, however, it was losing favor. A national survey conducted in 1959 indicated that only 9.9 percent of the schools were using a partially departmentalized plan and that less than 1 percent were completely departmentalized.[13] A study reported three years later (1962) indicated a slight trend toward more departmentalization: some departmentalization 36 percent, all departmentalization 3 percent.[14] Complete departmentalization, with pupils or teachers moving from classroom to classroom at the end of each period, is practiced more frequently in grades four, five, and six than it is in the lower grades. It remains to be seen whether departmentalization will again take over in elementary schools as more and more schools make the transition to the "new" mathematics, the "new" science, and the "new" foreign language.

ADVANTAGES CLAIMED FOR DEPARTMENTALIZATION

1. The new programs, particularly in mathematics and science, emphasize teaching each subject according to the structure of the discipline; only the teacher who has specialized in the discipline can do this.

2. It is a rare teacher who has high-level competence in the teaching of more than one or two subjects.

3. Departmentalization makes it easier for the teacher to keep up with new developments in methods, materials, and equipment in one or two fields.

4. More young men may be attracted to teaching in the elementary school if they are not required to teach all the subjects.

5. It is easier to provide special equipment for one or two rooms in a building than it is to provide special equipment for all classrooms.

LIMITATIONS OF DEPARTMENTALIZATION

1. It is difficult for a teacher who has a different group of pupils each period of the school day to learn to know every pupil well.

2. There is little opportunity to help pupils see the interrelationships between school subjects.

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[13] Henry J. Otto and David C. Sanders, *Elementary School Organization and Administration* (fourth ed. New York: Appleton-Century-Crofts, 1964), p. 75.

[14] Project on the Instructional Program of the Public Schools (1962), p. 13.

3. There is little opportunity for unit teaching, which cuts across subject matter lines and usually requires more than one period in the school day.

4. The plan encourages the teacher to regard himself as a subject-matter specialist rather than as a specialist in working with children.

5. Routine matters such as record keeping, evaluation, guidance, and reporting to parents are difficult to handle under this plan.

Ability Grouping

Ability grouping is an attempt to form instructional groups composed of pupils who are near enough alike in respect to one or more traits to justify teaching them as a group and to reduce the task of adapting instruction to individual differences. The plan has been used in large schools, with several teachers at each grade level, for the purpose of assigning pupils to the various teachers on the basis of ability to learn; it has also been used for the purpose of grouping pupils within a single classroom according to their ability to learn. Measures of intelligence (mental age and IQ) have been used as the bases for forming homogeneous groups by many schools; other schools have based grouping on chronological age, achievement (chiefly in reading), social maturity, and special abilities and disabilities.[15]

Discussions of ability grouping generally mention the Detroit, Michigan, schools, where the famous X-Y-Z grouping plan was introduced about 1920. The 10,000 pupils entering the first grade were sectioned in each school into X group—containing the upper 20 percent—Y group—containing the middle 60 percent—and Z group—containing the lower 20 percent. The number of schools using ability grouping increased noticeably until the late 1950s. A national survey indicated, however, that by 1959 only 28 percent of the schools reporting were using the plan.[16] Studies conducted by Otto, Goodlad, and others reveal some significant information regarding the extent to which so-called ability grouping provides a teacher with a homogenous group of pupils: when two sections are created, variability is reduced by 7 percent; when three sections are created, variability is reduced by 17 percent.[17]

ADVANTAGES CLAIMED FOR ABILITY GROUPING

1. The teacher who has a group of abler pupils can challenge these pupils to work up to their capacity by using more difficult materials, expecting these pupils to progress more rapidly from one level of difficulty to another, and requiring a higher quality of performance.

2. The teacher who has a group of less capable pupils can gear the instruction to their level of ability by using easier materials, giving them more

[15] See Robert Hill Lane, *The Teacher in the Modern Elementary School* (Boston: Houghton Mifflin Company, 1941), Chapter 3.
[16] Stuart E. Dean, *Elementary School Administration and Organization*, Bulletin No. 11 (Washington, D.C.: U.S. Government Printing Office, 1960), Chapter 10.
[17] Otto and Sanders, p. 104.

time to progress from level of difficulty to another, and setting more realistic standards for performance.

3. Differentiated instruction in terms of ability and effort enhance equality of opportunity for pupils with wide variations in ability.

4. Parents, especially those whose children are in the upper ability group, generally favor the plan.

5. Teachers, who are inclined to hope that some plan will be found to give them a group of pupils who are somewhat alike in ability, generally favor the plan.

6. It is more true to life to have pupils compete with those who are somewhere near their own level of ability; slow pupils particularly have better opportunities to become leaders in their own groups.

7. Teachers have an opportunity to do a better job of teaching the skill subjects when the pupils in their classes do not vary so widely in ability.

8. The teacher has a better opportunity to work with individuals when the range of ability in the class is reduced somewhat.

LIMITATIONS OF ABILITY GROUPING

1. Grouping pupils into high, average, and low groups does not reduce variations among the pupils in these groups to any great degree: teachers must still provide differentiated instruction within these groups.

2. The plan will not accomplish the purpose of providing instruction for each pupil according to his ability unless materials are provided for each group that are suitable for pupils of that general level of ability; this is not always done.

3. The plan violates the pupil's right to be different; when he is labeled slow, average, or bright, he begins to think of himself in these terms and begins to try to be like others in his group.

4. The plan pays little attention to any characteristic of a pupil other than the trait used as the basis for grouping; there is evidence that pupils with similar scores on intelligence tests may differ widely in respect to other characteristics.

5. It is difficult to find teachers who are willing to work only with slow groups.

6. Ability grouping is a form of segregation; the pupils in the high ability group generally come from families at the higher socioeconomic level.

7. Parents frequently object to having their children assigned to the slow group.

GROUPING IN RELATION TO OTHER FACETS OF ORGANIZATION

Grouping pupils for instruction is only one facet of the problem of elementary school organization. Organizing learning experiences, developing an effective classroom organization, and organizing the staff for curriculum im-

provement are other important facets discussed in the chapters that follow. Current practices in grouping pupils have been described in some detail merely to give the reader information about experiments that have been conducted in some school systems. A point of view about school organization expressed by the *National Elementary Principal* places these plans in proper perspective.

> The form that the organization takes is effective to the degree that it is compatible with the educational beliefs and goals of the school staff. It would be a mistake to try to take over some package plan that has seemed to be effective in another community. It would be equally unwise to disregard experiments that have taken place in other communities. What each school must do is to tailor-make an organization that will, within the specific situation in which it must function, meet the needs of each child.[18]

The Project on Instruction of the National Education Association suggests that state and local authorities need the advice of bodies divorced from both political and commercial affiliations. Regional curriculum study centers are recommended to perform this service. These centers would be established at major universities located in the Eastern, Western, Central and Southern sections of the country; they would be staffed by competent specialists in the behavioral sciences and in each of the academic disciplines; and school systems would have an opportunity to send able personnel to these centers. "Local school boards, confused and perplexed over community pressures to use certain instructional materials, could draw upon expert analyses carried on in a setting of impartiality." [19]

When the student who is preparing to teach in the elementary school begins to study the problem of grouping pupils for instructional purposes, he soon learns that it is not a simple problem. Some decisions have to be made by the entire staff of the individual elementary school or by the staff of the school system; other decisions have to be made by the classroom teacher. The problem that confronts the entire school staff is twofold: improving *vertical* organization and improving *horizontal* organization. "Vertical organization provides a system for classifying students and moving them upward from entry to departure from the school unit. . . . Horizontal structure provides a system for dividing students into instructional groups and allocating them to teachers." [20] The graded school, multigrade grouping, and the nongraded plan are examples of vertical organization. Departmentalization, the self-contained classroom, and team teaching are examples of horizontal organization.

Dividing pupils into instructional groups and assigning them to teachers is also called "interclass grouping"; grouping pupils within a given classroom

[18] National Elementary Principal, p. 18.
[19] Project on the Instructional Program of the Public Schools, *Planning and Organizing for Teaching* (Washington, D.C.: National Education Association, 1963), p. 49.
[20] Project on the Instructional Program of the Public Schools (1963), p. 70.

has been called "intraclass grouping." As the student looks into the problem of intraclass grouping, he soon discovers that it is not a simple problem of dividing the pupils into high, average, and low groups. Indeed, one book that is devoted entirely to intraclass grouping mentions reading groups, arithmetic groups, social studies groups, pupil-teacher planning, developing pupil leadership, maintaining the unity of the class, meeting individual needs, classroom facilities, textbooks and workbooks, and the classroom library.[21] McAulay explains three types of intraclass grouping, proceeding from a simple to a more complicated type, which may be used in the social studies. The first type involves dividing the class into groups of three pupils each, including one pupil of above-average ability, one of below-average, and one of average ability. The brighter pupil is given mimeographed material prepared by the teacher that is larger in concept, advanced in vocabulary, and enriched in content; the pupil who has average ability is given material that is less difficult; and the slow pupil is given a shorter block of material that is easier in vocabulary and concept. He calls this procedure "the individual group method." After the pupils have become familiar with this simple type of group work, they move into "like group work." Here the groups are larger and are composed of pupils with similar interests and abilities; here also content and methods are adapted to the needs of each group. The third stage is called "the diverse group." Here each group is composed of pupils with different interests and abilities—one pupil may be an excellent reader, another may have artistic or musical ability, another may have mechanical ability, and still another may have leadership or organizational ability. All members of a group work on a common problem, but each member makes his own unique contribution.[22] This description of types of grouping used in the social studies illustrates an important principle: Grouping pupils for instructional purposes should not be a fixed, static structure; it should be a flexible, dynamic process. Moreover, the type of grouping used should be appropriate to the task at hand.

SUMMARY

1. Every generation of American educators has struggled with the problem of grouping children for instructional purposes.

2. The first three decades of the twentieth century witnessed the emergence of a number of innovations in grouping: the Gary plan, the Winnetka plan, the Dalton plan, and the cooperative group plan.

Current plans for grouping carry different labels, operate in a different setting, and are designed to serve different purposes than those that were popular earlier in this century.

[21] Mary Clare Petty, *Intraclass Grouping in the Elementary School* (Austin, Tex.: University of Texas Press, 1953).

[22] William B. Ragan and John D. McAulay, *Social Studies for Today's Children* (New York: Appleton-Century-Crofts, 1964), pp. 168–174.

4. The nongraded elementary school movement of the last decade represents an effort to remedy the weaknesses of the graded school, to make better provision for implementing what we know about individual differences, to put into practice the philosophy of continuous growth, and to provide opportunities for gifted pupils to make the most of their talents.

5. Multigrade and multiage grouping emphasize the advantage of placing pupils in the same classroom who differ in terms of age and grade levels.

6. The dual progress plan permits pupils to progress through a graded sequence in certain subjects callel cultural imperatives and through an ungraded sequence in other subjects called cultural electives. The plan also provides for the use of specialists to teach the cultural electives.

7. The self-contained classroom calls for placing a group of pupils with one teacher for the major portion of the school day; it is designed to enable the teacher to learn a great deal about each pupil by observing him in a wide variety of learning situations.

8. Team teaching is an arrangement that provides for having two or more teachers, with abilities and skills that complement each other, assume joint responsibility for directing the learning activities of a group of pupils. The plan provides for large-group learning situations, small-group learning situations, and individual learning situations.

9. Departmentalization may be viewed as a plan for grouping pupils which permits the teacher to specialize in the teaching of one or a few subjects. The plan is used more in grades four, five, and six than it is in the lower grades.

10. Ability grouping refers to the practice of forming instructional groups composed of pupils who are near enough alike to justify teaching them as a group and to reduce the task of adapting instruction to differences in ability.

11. Grouping pupils for instructional purposes is only one facet of the problem of elementary school organization. Organizing learning experiences, developing an effective classroom organization, and organizing the staff for curriculum improvement are other important facets.

12. The staff of each elementary school should develop a plan for grouping that will, within the specific situation in which it must function, meet the needs of each child. Regional curriculum study centers have been suggested to provide expert analyses carried on in a setting of impartiality upon which local school systems could depend for guidance.

13. Some decisions regarding grouping must be made by the entire staff of a school or school system; others must be made by the classroom teacher.

14. Vertical grouping provides a system for moving pupils upward through the school program; horizontal grouping provides a system for allocating pupils to teachers.

15. Intraclass grouping involves a great deal more than dividing pupils into high, average, and low groups within a classroom.

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Dean, Stuart E., *Elementary School Administration and Organization*. Washington, D.C.: U.S. Government Printing Office, 1960. Chapter 10 of this national survey of practices and policies of elementary schools deals with trends in grouping practices.

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National Elementary Principal, *Elementary School Organization: Purposes, Patterns, Perspective*. Washington, D.C.: National Education Association, 1961. Chapter 1, "A Point of View About School Organization," and Chapter 4, "Toward Improved School Organization," are particularly useful.

————, *Those First Years at School*. Washington, D.C.: National Education Association, 1960. "Grouping Practices," pp. 147–166 deals briefly with the self-contained classroom, the nongraded elementary school, the primary unit, departmentalization, and the dual progress plan.

National Society for the Study of Education, *The Dynamics of Instructional Groups*. Chicago: University of Chicago Press, 1960. Several chapters in this yearbook describe in detail the processes carried on in classroom groups.

Otto, Henry J., and David C. Sanders, *Elementary School Organization and Administration*. Fourth ed.; New York: Appleton-Century-Crofts, 1964. Chapter 4, "Grouping Children for Wholesome Development," explains the relationship of grouping to other facets of organization and provides a list of six basic considerations relating to grouping.

Petty, Mary Clare, *Intraclass Grouping in the Elementary School*. Austin, Tex.: University of Texas Press, 1953. This book is the most comprehensive treatment of the problems involved in grouping pupils within a class yet published.

Project on the Instructional Program of the Public Schools, *Planning and Organizing for Teaching*. Washington, D.C.: National Education Association, 1963. Chapter 3, "Toward Improved School Organization," and Chapter 4, "Toward Improved Classroom Organization," deal with several of the problems discussed in this Chapter.

————, *The Principals Look at the Schools*. Washington, D.C.: National Education Association, 1962. Chapter 2 gives some interesting data on trends in the use of various innovations in grouping.

Stoddard, George D., *The Dual Progress Plan: A New Philosophy and Program in Elementary Education*. New York: Harper & Row, Publishers, 1961. This book gives a detailed description of the procedures used in the dual progress plan.

SELECTED FILMS AND RECORDINGS

FILMS

Individual Differences. A two-reel sound film, showing the effects of a standardized type of teaching on a shy, deliberate child; how the teacher can provide individualized treatment. (Coronet Films)

This Is Robert. An eighty-minute sound film, showing the development of an aggressive, "difficult," yet appealing child from his early nursery school days to his first day in a public school. (New York University)

RECORDINGS

Providing for Individual Differences. An eighteen-minute recording. (Teaching Aids Laboratory, Ohio State University, Columbus, Ohio)

Some Experimental Approaches to Improved Staff Utilization. A twenty-two-minute recording. (Educational Recordings, Los Angeles, California)

Photo Comment

GROUPING WITHIN THE CLASSROOM

Providing for small-group instruction has long been recognized as desirable by elementary school teachers. When lessons are taught to the whole class, thirty-four pupils, many of whom may be inattentive, wait while one pupil interacts with the teacher. But how to engage more pupils in active exploring and learning is not always easy to arrange. This photograph illustrates one soluton to the problem, a solution that is possible with efficient organization. The class is divided into groups of four for the science lesson, with a laboratory station set up for each group. One person is responsible for setting out and returning equipment each day. The lesson begins with a class discussion out of which come problems to be investigated. At each laboratory station, children experiment to find answers to the problems, and pool answers at the close of class.

The laboratory-station type of organization is uniquely suited to the teaching of some school subjects. Science and mathematics come immediately to mind, but work in the social studies may proceed in comparable fashion when small groups are sharing books and other equipment for special projects.

In teaching primary reading, teachers usually divide the class into three or more groups for instruction. The chief drawback of this system is that, instead of spending time on needed oral reading, pupils must spend most of the reading period in unsupervised seatwork, while the teacher is working with another group. These unsupervised assignments are, of course, corrected later, but too often they give pupils a chance to practice wrong answers and in so doing to learn incorrect responses.

Some teachers are experimenting with having pupils read aloud in twos or in threes. They take turns reading to each other in their small group, while the teacher moves from group to group, giving individual instruction. Since, in a class of thirty pupils, ten may be reading aloud at the same time, this scheme of grouping permits the maximum oral practice that beginners need. There is no quick recipe for grouping within a classroom, and good teachers continue to experiment to find solutions suitable for their special needs.

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Problems and Projects

1. Perhaps no other entrenched belief has been so thoroughly discredited in recent years as the doctrine of fixed ability. Instead of looking upon intelligence as chiefly the product of heredity, the view widely held today is that learning ability is the result of organism–environment interaction. That is, the mind develops as the result of encounters the child has with the environment, in the course of which mental structures accommodate to new information and change accordingly. Thus an environment that provides intellectual stimulation actually aids the development of intelligence.

Read J. McV. Hunt, "The Psychological Basis for Using Pre-School Enrichment as an Antidote for Cultural Deprivation." Merrill-Palmer Quarterly (1964), Vol. 10, pp. 209–245. Can you find, in Professor Hunt's analysis, a rationale for supporting any one form of grouping at grade one level? For abandoning any form?

2. In newly desegregated schools, there are special problems in grouping children for instructional purposes. Any grouping plan where children are assigned to homogeneous ability groups as in the nongraded primary school (the "track" system) is likely to result in classrooms where Negro children predominate. Typically these children have been attending inferior schools with large classes, poor facilities, and poor instructors. Since, in addition, many of the children come from disadvantaged homes, their intelligence and achievement test scores are low, and so they are assigned to the slowest-moving track. What drawbacks to Negro children do you see in such a practice? What serious disadvantages are there both to cognitive development and development of an adequate self-image? Are there modifications of the track system that might be made to avoid its disadvantages?

3. One advantage of team teaching is that it makes it possible to recognize superior teachers, to extend their services to more pupils, to utilize their talents in program planning, and to pay them additional sums for their services. What other advantages do you see in team teaching? What possible difficulties?

4. Lincoln Elementary School, where you are teaching, has been using the self-contained-classroom plan. The staff is considering the advisability of changing to some form of departmentalization. Would you favor departmentalization for all grades? Would you limit it to grades four, five, and six? Would you favor complete departmentalization in grades four, five, and six, or partial departmentalization? What criteria would you use in making your decisions?

5. Jefferson Elementary School, where you teach in the nongraded primary, has three sections of beginners. Pupils are assigned to teachers accord-

ing to scores on an intelligence test and the judgment of the kindergarten teachers. One teacher has the low group, another teacher the next reading level, and another teacher the fast-learning group. Most of the pupils in your "low" group come from families at the lower socioeconomic level of the community. One pupil in your group, however, comes from a wealthy and socially prominent family. You find that all his playmates are in the high group; that his language, clothing, and manners are different from those of all the other pupils in your room. His parents put pressure upon the principal to move the child to a higher-level primary. Discuss the pros and cons of such a move.

6. The idea has been presented in this chapter that, regardless of the type of grouping the entire staff of the school adopts, many decisions remain for the classroom teacher; that intraclass grouping involves a great deal more than dividing the pupils into high, average, and low groups. Explain procedures you would use in grouping pupils within your classroom for various enterprises. For what enterprises might pupils from your classroom join with pupils from other classrooms? What is the meaning of the statement that grouping should be a dynamic process rather than a fixed structure?

Organizing
Learning Experiences

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School organization is not an end in itself; it is a
means of facilitating the achievement of whatever
ends or purposes are deemed worthy for the school
as an institution.
—Henry J. Otto and David C. Sanders, *Elementary
School Organization and Administration* (fourth ed.;
New York: Appleton-Century-Crofts, 1964), p. 3.

Studies of child growth and development, information about the realities and ideals of the culture, and statements of educational objectives all provide important guides to the selection of learning experiences. However, a mere collection of educative experiences is not sufficient. An important problem still remains: How to organize learning experiences so that each experience fits into a larger whole and contributes to the development of those behavior traits which are essential in our kind of society. The present chapter is concerned, therefore, with the problem of developing the design of the curriculum.

PLANNING THE CURRICULUM ORGANIZATION

Planning the curriculum organization for any elementary school involves the general acceptance on the part of the staff of what they expect to do for the boys and girls who attend the school. After this has been determined, the general framework of the curriculum can be developed and the specific experiences planned to fit into the over-all scheme. Too frequently the staff accepts without question the curriculum organization already in operation. This is understandable in view of the fact that the organization of many social agencies lags behind technological changes, and social institutions generally struggle along with outworn forms of organization suited to an age that has long since ceased to exist. Effort to modernize the organization of

Congress, to eliminate obsolete county governments, and to develop larger local units of school administration are cases in point. A factor that operates to delay the development of more adequate curriculum organization is the widely accepted idea that a good teacher can achieve good results regardless of the organization. Although it is evident that no plan of curriculum organization can produce good results without good teachers, it is also true that the work of the best teachers can be hindered by a curriculum organization that does not permit the full use of their talents.

As indicated in Chapter 1, the choice does not lie between a rigidly planned curriculum and a planless one. What is needed is continuous, co-operative planning by the local staff as well as by state and national agencies to keep the curriculum in harmony with current needs.

PRINCIPLES OF CURRICULUM ORGANIZATION

Curriculum organization should be regarded as the means to help achieve the objectives of the school. There is no advantage in introducing an innovation in curriculum organization unless the school faculty sees clearly that the existing organization is out of harmony with the accepted objectives of the school. Since educational objectives are always in the process of modification and expansion as teachers gain new insights, the over-all design of the curriculum must likewise be subject to continuous study and modification; it cannot be completed at any given time. The following principles of curriculum organization should serve as useful guides for teachers engaged in such a study.

1. *Curriculum organization should help to coordinate the efforts of teachers.* The program must be arranged so that the various staff members who work with the same group of children will supplement rather than duplicate one another's efforts. What one teacher does for the child must be determined to some extent by what other teachers have done for him and by what future teachers are expected to do.

2. *Curriculum organization should provide a well-balanced day of living for boys and girls.* Opportunities for the systematic study of subject-matter areas as well as for work on units that cut across subject-matter lines should be provided. Experiences that develop understanding and insight as well as provision for systematic drill when it is needed should also be provided. Periods of strenuous activity should be balanced by periods for rest and relaxation, opportunities for self-expression and initiative should be balanced by experiences in conforming to group standards, and provision should be made for children to work on individual as well as group projects.

3. *Curriculum organization should provide for continuity in the learning experiences of the child.* The newer psychology of learning furnishes many

guiding principles for curriculum organization. Among these principles are (a) learning is growth rather than a mere accumulation of knowledge and skill, (b) growth and development are continuous, (c) individuals differ in their rates of growth, and (d) learning is experiencing.

The sequence of experiences found in many elementary schools violates these principles. The ladder system of grade placement, which dictates that long division be completed in one grade and fractions in another; that reading should be taught only in the elementary school; that all children who enter school at the same time will be ready to begin reading at a given time; and that economics is so complex and difficult a subject that it should not be taught until the student is in college presents a direct contradiction of the principle of learning as continuous growth. Minimum grade standards, annual promotions, and the class-as-a-whole method of teaching are other examples of the failure to observe generally accepted principles of learning. These examples show that a curriculum organization that achieves continuity in the materials to be taught frequently results in no continuity at all for the learner.

The elimination of school subjects and the substitution of experiences based on immediate felt needs of pupils does not solve the problem of continuity. Curriculum experiences need to be planned in such a way that they help the child to understand increasingly more complex materials and to master increasingly more effective skills of expression. They need to move gradually from what is familiar and concrete to what is remote and abstract. For example, the development of social concepts, such as interdependence, tolerance, and democracy, begins with the immediate social group, the family, and moves gradually to more complex situations involving larger groups. Such concepts cannot be mastered once and for all at any grade level; they must recur again and again in different and increasingly more mature contexts.

4. *Curriculum organization should provide for unified learning.* Many critics of education have pointed to the failure to develop individuals who can bring anything but a specialized orientation to problems and issues. Other critics have been concerned about the failure, as they see it, to focus attention effectively on specific content, problems, and skills. Thus, teachers and principals face a perennial conflict between those who urge specialization and those who see the need for integration.

The point of view has already been expressed in this book that provision should be made for both the direct teaching of subjects and for broad, meaningful experiences for children—experiences that cut across subject lines. Because experience has shown that learning in the subject areas is more effective as well as more meaningful when provision is made for seeing the interrelationship between various subjects, many elementary schools provide for both the teaching of subjects at regularly scheduled periods and for long, uninterrupted periods for planning and working on problems or units that

challenge pupils and at the same time use subject matter and activities from many sources.

5. *Curriculum organization within any given subject area must take into account the structure of the discipline.* The classroom teacher does not decide what concepts and skills are important in the area of elementary school mathematics; these are identified by specialists in the field. It is the teacher who decides, however, which of these basic concepts and skills pupils are ready for, and how best to organize learning experiences so that pupils will grasp the concepts efficiently and meaningfully.

6. *Curriculum organization should take into account the principle of compensatory education.* Effective planning of learning experiences involves a systematic analysis of learning deficits, particularly for culturally disadvantaged children. Learning experiences need to be systematically planned to match these deficits. As Bruner has pointed out, "The task of teaching a subject to a child at any particular age is one of representing the structure of that subject in terms of the child's way of viewing things." [1]

TYPES OF CURRICULUM ORGANIZATION

The development of the general design of the curriculum has been given much attention for several decades in educational literature and in educational conferences. Many terms have been used to designate innovations in curriculum organization. Correlation, fusion, broad fields, the core curriculum, integration, and the experience curriculum have all had stanch defenders and relentless critics. Actually, it is seldom, if ever, possible to find any one of these types operating in pure form in a given school. Frequently a paper organization is given one of the labels with no counterpart found in actual practice.

> The important thing is whether [this] structure permits instruction and activities needed to serve the objectives of the school, and not how it can be classified. Since the nature of the general organization of the curriculum determines what can be done in the classroom, the dominant organization of the program should be flexible enough to permit a variety of specific approaches to curriculum and teaching. This cannot be done by an obstinate loyalty to a given form, no matter what its merits are. [2]

Nevertheless, in order to have some basis for making practical decisions, the elementary school teacher needs to know the general characteristics of the principal types of curriculum organization.

[1] Jerome S. Bruner, *The Process of Education* (Cambridge, Mass.: Harvard University Press, 1962), p. 33.

[2] Hilda Taba, "General Techniques of Curriculum Planning," in Forty-fourth Yearbook, Part I, National Society for the Study of Education, *Curriculum Reconstruction* (Chicago: University of Chicago Press, 1945), p. 108.

Separate-Subjects Organization

The type of curriculum with which most adults of today are familiar is the one in which school subjects constitute the basis for organizing the school experiences of children. This type of curriculum organization was characterized by Meriam in 1920 as aimless, lifeless, disconnected, congested, wasteful, and untimely.[3] It was not unusual for the elementary school child to be taking as many as fifteen subjects during one school term. The list usually included reading, writing, spelling, language, arithmetic, history, geography, civics, physiology, hygiene, nature study, music, art, manual training, and domestic science. With this multiplicity of subjects, with content in each selected on the basis of logical arrangement, with little regard for the concerns of children, and with memorization of the text as the dominant method, it is not difficult to see why leaders in education have long been demanding a fundamental reorganization. Fortunately, the separate-subjects type of organization described above probably cannot be found in pure form in very many elementary schools today.

Innovations in curriculum organization have resulted in the main from a desire to provide more reality and more unity in the school experiences of children. Most of the criticism of the separate-subjects type of curriculum organization reflects this desire. The need for an organization based more directly on the actual problems of living was stressed by the committee that prepared the third yearbook of the John Dewey Society.

It is the conviction of the Committee that the mere selection of a new group of subjects will fail to meet the educational needs of contemporary living. We believe that a fundamental reorientation must be accomplished, one that cuts through the academic departmentalization of knowledge, one that centers the life of the school around the basic problems of actual cooperative living—health, leisure, work, conservation of material resources, effective utilization of human resources, and the like.[4]

The need of an organization based more directly on the unitary nature of child development was indicated by Melvin:

It [the separate-subjects organization] does not offer a satisfactory scheme for the organization of teaching which is based on the unity of personality and of the development of individual experience. It is a leftover from a type of culture which is rapidly passing away, an outworn garment no longer fit to wear.[5]

[3] Junius L. Meriam, *Child Life and the Curriculum* (New York: Harcourt, Brace & World, Inc., 1920), p. 52.

[4] John Dewey Society, Third Yearbook, *Democracy and the Curriculum* (New York: Appleton-Century-Crofts, 1939), p. 412.

[5] A. Gordon Melvin, *Method for the New School* (New York: The John Day Company, Inc., 1941), p. 19.

The core curriculum at the high school level reflects the desire to develop a curriculum organization more in harmony with the realities of contemporary living and the characteristics and needs of youth.

Correlation

One of the earliest attempts to bring about a more unified curriculum organization was the policy of teaching similar topics in two or more subjects simultaneously in an effort to help pupils gain a better understanding of such topics. For example, the colonial period in history and the New England states in geography were taught during the same six-week period so that what was learned in one subject might be related to what was learned in the other. Music and art were correlated with the social studies in a similar manner. Under this plan just as many subjects are taught as ever and it is obvious that the procedure represented a very short step toward a unified program.

Fusion or Broad Fields

The fusion type of curriculum organization divides the school day into periods for broad fields, such as language arts, social studies, arithmetic, science and health, and the arts and crafts, instead of providing a separate period for each specific subject, such as reading, spelling, and handwriting. Many teachers, particularly in the primary grades, set aside specific periods within the longer period devoted to a broad field for emphasis on spelling, reading, and other subjects. This, however, does not violate the principle of broad-fields organization.

This procedure has several advantages over the separate-subjects type of organization. First, it provides for longer periods of uninterrupted work and makes pupil-teacher planning easier. Second, it makes it easier for pupils to see the interrelationships between subjects such as spelling and handwriting. Third, some combination of subjects is essential if a balance is to be maintained in the elementary school program. If history, geography, political science, economics, sociology, and anthropology were each taught as a separate subject, there would be little time left for other subjects. The broad-fields plan is the typical organization used in American elementary schools today.

An interesting version of the broad fields type of organization has been proposed by Phenix. He maintains that educators should understand the kinds of meaning that have proved effective in the development of civilization; that these meanings may be found in the various scholarly disciplines; and that, "for purposes of education, these disciplines may be assigned to six basic logical classes, or realms of meaning, indicating the general kinds of understanding a person must have if he is to function well within the civilized community." [6]

[6] Philip H. Phenix, *Realms of Meaning* (New York: McGraw-Hill, Inc., 1964), pp. 28–29.

Phenix suggests six realms of meaning and assigns the various disciplines to these six realms as follows: *symbolics*—ordinary language, mathematics, nondiscursive symbolic forms; *empirics*—physical sciences, life sciences, psychology, social sciences; *esthetics*—music, visual arts, arts of movement, literature; *synnoetics*—philosophy, psychology, literature, religion, in their existential aspects; *ethics*—the varied special areas of moral and ethical concern; *synoptics*—history, religion, philosophy.

Integration

A fourth type of curriculum organization eliminates school subjects and broad fields of subject matter and presents a new basis for organizing learning experiences. This type has frequently been called the integrated curriculum. This designation has been criticized as representing a misuse of terms, since it is individuals rather than school subjects that are to become integrated. The term "integrative curriculum" is perhaps psychologically sounder, since it indicates that the end sought is the integration of the individual both within himself and with his environment. The integrative curriculum has taken three forms: the child-centered curriculum, the social-functions curriculum, and the experience curriculum. These differ slightly in terms of the basis selected for organizing the daily program and in the extent to which the curriculum is planned in advance.

THE CHILD-CENTERED CURRICULUM   The program that John Dewey established in his school at the University of Chicago in 1896 organized learning experiences around four human impulses: the social impulse, the constructive impulse, the impulse to investigate and experiment, and the expressive or artistic impulse. Meriam's school, established at the University of Missouri in 1904, used the normal activities of children as the basis for organizing learning experiences. He regarded observation, play, stories, and handwork as normal child activities. Collings introduced the child-centered curriculum into the public schools of McDonald County, Missouri, in 1917. He used play projects, excursion projects, and story projects as the centers about which learning activities were organized.[7] Although these experimental schools did much to direct attention to the child as an important factor in curriculum planning, this type of organization has never been very widely used in public schools.

THE SOCIAL-FUNCTIONS CURRICULUM   Later attempts to eliminate school subjects from the curriculum used major functions of social life as the basis for organizing learning experiences. The *Virginia Course of Study for Elementary Schools*, published in 1934, was organized around areas of living such as protection, conservation, production, consumption, communication, trans-

[7] See John Dewey, *School and Society* (Chicago: University of Chicago Press, 1915); Meriam, *Child Life and the Curriculum*; and Ellsworth Collings, *An Experiment with a Project Curriculum* (New York: The Macmillan Company, 1923).

portation, recreation, expression of esthetic impulses, and expression of religious impulses. Centers of interest were listed for each grade, such as home and school life for the first grade and community life for the second grade. Although a plan similar to this is frequently used for organizing the social studies program, the use of this scheme for organizing the entire program of the elementary school made little headway. In 1949, Shores reported that there was a trend toward research in elementary education centered on studies of child growth and on the improvement of instruction in the subject areas of the elementary school curriculum.[8] The recent emphasis on taking into account the structure of each discipline indicates that the social-functions approach will not be used to any great extent in the immediate future.

The social-functions curriculum probably provides opportunity for the greatest amount of integration of learnings. Under such a plan, traditional subject-matter lines disappear and teacher and children draw upon whatever discipline can contribute to the solution of problems that are being studied. For example, a fifth-grade class might study a unit on how the early pioneers moved westward. Such a unit would draw heavily upon traditional subjects like geography, history, economics, and sociology; but there are many science learnings that would also be included. Questions relating to weather and climate, animal life, vegetation, desert regions, and the like might be answered by drawing freely upon both the physical and biological sciences. Children would also learn and practice many reading-study skills as they searched for information about early methods of transportation and prepared reports. The children might spend the large block of time set aside for work on the unit on any one or more of these kinds of experiences. On some days learning activities might draw more heavily upon geography or history as we know them traditionally, but on others the emphasis might be on science, the language arts, or the fine arts.

THE EXPERIENCE CURRICULUM   Since the time of Rousseau, educators have been emphasizing the immediate felt needs of children as a basis for educational planning. The child-centered school movement, which reached its heights in the 1920s, served a useful function by calling attention to the interests and purposes of children and by providing a plan of organization based primarily on those interests and purposes. Without losing sight of the concerns of children, the social-functions approach, which developed later, represented an effort to give the school program a social orientation that seemed to be neglected by the advocates of the child-centered school.

A still more recent innovation has been called the experience curriculum. This type resembles the child-centered approach in that it uses the concerns of children as the basis for organizing the work of the school. It differs from the earlier child-centered programs in its view that the interests and needs of

[8] Harlan Shores, *Elementary School Curriculum Organization, 1890–1949* (Urbana, Ill.: University of Illinois Press, 1949).

children cannot be anticipated and that therefore no curriculum framework can be agreed upon for the school system. The earlier child-centered programs, on the other hand, set up in advance certain areas of normal child activity and to that extent planned the framework of the curriculum beforehand. It should be pointed out that even these earlier child-centered programs emphasized the value of curriculum planning "on the spot" by each teacher and his group of children, but this planning of details of projects and procedures existed within a curriculum framework set up in advance.

The basic philosophy underlying the experience curriculum may be summarized as follows:

1. It eliminates school subjects and subject-matter areas as the determining factors in curriculum organization.

2. It regards education as the continuous growth of the whole individual toward intelligent participation in the life around him.

3. Since the environment is constantly changing, the curriculum cannot remain static; instead, it must be a series of experiences offering possibilities for growth and understanding which will help the child meet future problems of living more effectively.

4. The curriculum begins with the interests and felt needs of children.

5. Growth depends upon the active participation of the child in activities that are in line with his own interests and felt needs.

6. It is the problem of the teacher to arrange the environment so that the child will be stimulated to active participation in growth experiences.

7. It is impossible for a teacher or a group of teachers to set up these growth experiences in advance; such programs would force the child to pursue the personal goals of others rather than his own goals.

8. Subjects or subject-matter fields do not represent the curriculum; rather, they represent resources that may be drawn upon as they assist the child in the solution of a problem of his own choosing.

9. It does not neglect the problem of orienting the child in the culture around him, since felt needs of children correspond closely to social problems and arrangements.

10. The only way for the child to gain social understanding, social sensitivity, and social skills is to meet effectively the social situations that arise from day to day. Take care of the present and the future will take care of itself.

The arguments usually advanced by those who are opposed to the experience curriculum can be summarized as follows:

1. Felt needs of children do not alone provide an adequate basis for curriculum organization. The characteristics of the society in which the school

exists impose certain obligations on the school that cannot be escaped if education is to be effective in meeting problems of living. Immediate felt needs of children do not assure a desirable breadth of experience.

2. Felt needs of children do constitute powerful motivation for learning, but teachers can anticipate these needs by reference to the studies of child development and by continuous study of the children in a specific school with sufficient accuracy to plan a general framework for the curriculum.

3. Felt needs of children must come from somewhere. They arise from experience in a specific environment. Rather than follow up immediate felt needs of children over long periods of time to the exclusion of more important matters, it is the responsibility of the teacher, on the basis of a greater background of experience, to furnish guidance to pupils in the development of worthwhile interests. The teacher is not helpless in the face of a group of children with limited, superficial, and passing interests. He has the responsibility not only for discovering interests but also for developing new ones.

4. Over-all curriculum planning is essential to assure continuity in the school experiences of children.

LOGICAL AND PSYCHOLOGICAL ORGANIZATION

Attention has been called in Chapter I to the need for maintaining a balance between extreme points of view in regard to educational problems. The analysis of general types of curriculum organization presented here points up the need for such a balance. Confronted with a curriculum organization that was based almost exclusively on the logical organization of subject matter, some educational reformers have gone to the opposite extreme of advocating the elimination of subjects from the school program. There is considerable evidence from both educational theory and educational practice that neither of these extremes is sound. Taba points out, for example, that recent experiments and research have shown that "both the logic of ideas and a psychologically sound learning sequence need to be taken into account in organizing the curriculum." [9]

Stratemeyer and associates have presented a plan for organizing learning experiences in terms of persistent life situations and the ways learners face them. They conclude, however, that opportunities should be provided for studying subject matter as an organized body of knowledge when this is needed. [10]

Hanna and his associates examined a large number of activity programs and found that the number of arithmetic experiences provided per week was

[9] Taba, p. 101.
[10] F. B. Stratemeyer and others, *Developing a Curriculum for Modern Living* (New York: Bureau of Publications, Teachers College, Columbia University, 1957), p. 408.

very small. They concluded that "functional experiences of childhood are alone not adequate to develop arithmetic skills." [11]

The evidence above reinforces the suggestion made several times in the preceding pages that the teacher in the modern elementary school must be prepared to direct the learning experiences of children in various types of organization. To achieve certain kinds of outcomes, the learning experience may exhibit more of the qualities of direct teaching of subjects, whereas to achieve other outcomes it may have the characteristics of the experience curriculum.

PURPOSES OF THE UNIFIED PROGRAM

Various terms have been used in referring to the unified learning program. Experiences that reach beyond subject-matter boundaries and utilize pupil initiative and cooperation have been called *projects, enterprises, activities,* and *units.* Although educational psychologists and child-development specialists have recently provided a great deal of data that support unified learning, the idea itself is not new. Good teachers have from time immemorial included the major features of the program in their work with children.

Comenius, in the sixteenth century, spoke out against the formal educational methods of that day. Later, Rousseau advocated teaching through natural experiences and Pestalozzi demonstrated the method of teaching that utilized realistic work projects. In this country, Bronson Alcott introduced the activity program into the schools of Concord, Massachusetts, as early as 1859. Francis Parker introduced socializing experiences and activities emphasizing pupil interest and activity into the schools at Quincy, Massachusetts, where he was principal from 1875 to 1880. John Dewey established the University Experimental School at the University of Chicago in 1896 which emphasized pupil activity, pupil purposes, and problem solving. The unified-learning philosophy prevailed in the Horace Mann and Lincoln schools at Teachers College, Columbia University, which were established in 1900 and 1917 respectively.

Some of the values teachers hope to achieve through the unified program are:

1. Skill in the use of techniques involved in democratic living;
2. Mastery of the three Rs in connection with problems that are directly related to the interests of pupils;
3. Providing a sufficient variety of experiences to meet the needs of all pupils;

[11] Paul R. Hanna, "Opportunities for the Use of Arithmetic in an Activity Program," in Tenth Yearbook, National Council of Teachers of Mathematics (New York: Bureau of Publications, Teachers College, Columbia University, 1935), pp. 85–120.

4. Capitalizing on the relatedness of learning experiences;

5. Discovering the potentialities of each child and helping him to develop them;

6. Achieving a better synthesis of learning that comes from home, school, and community;

7. Providing opportunities for the child to take an active part in planning, executing, and evaluating learning experiences.

SCHEDULING THE UNIFIED PROGRAM

Since most elementary schools find it desirable to devote a part of the school day to unified experiences and the remainder of the day to the teaching of subjects, attention must be given to the problem of dividing the time between these two phases of the instructional program. No hard-and-fast rule can be given for determining this ratio. In a few schools the problem has been solved by dividing the time equally between the two phases—that is, one half of the day is given to the unified program and the other half to the teaching of subjects. There appear to be sound psychological reasons for a distribution of the time in accordance with the maturity of the children rather than on the basis of an arbitrary equal division. Purely physical activities quite appropriately hold a large place in the education of young children, but such activities probably diminish in educational importance from childhood to adulthood. It has frequently been pointed out that in addition to providing for general education through the program of unified studies, the elementary school has the responsibility for helping children to develop specialized interests and to gradually become acquainted with the demands of the various fields of specialization. The child's interests, which at first are general and highly utilitarian, slowly become more specialized and intellectual.[12]

These considerations have resulted in a division of the school day between the unified-studies or core program and the direct teaching of subjects that allows relatively more time for the former in the primary grades and relatively more time for the latter in the intermediate and upper grades. An Oklahoma curriculum bulletin published in 1947 suggested that at least one fourth of the primary school day be devoted to the (core) curriculum and that other levels of the school use not less than one fifth of the school day for this purpose.[13] It suggested, however, that as teachers become familiar with the possibilities of the core curriculum in the development of skills in the various subjects more time be allotted to it in the daily program.

[12] Hollis L. Caswell and Doak S. Campbell, *Curriculum Development* (New York: American Book Company, 1935), pp. 275–286. See this reference for a more detailed discussion of this problem.

[13] Jake Smart, *New Steps in Education*, Bulletin No. 7 (Oklahoma City, Okla.: State Department of Public Instruction, 1947), p. 30.

The accompanying illustration presents the principle of the division of the school time between the unified-studies phase and the direct teaching of subjects should take into consideration the level of maturity of the children.

Grade	← ———— LENGTH OF THE SCHOOL DAY ———— →
one	Unified Experiences
two	Experiences units based on pupil interests and major phases of living
three	
four	Direct Teaching
five	Arithmetic / Language / Social studies / Science
six	Health / Arts and crafts
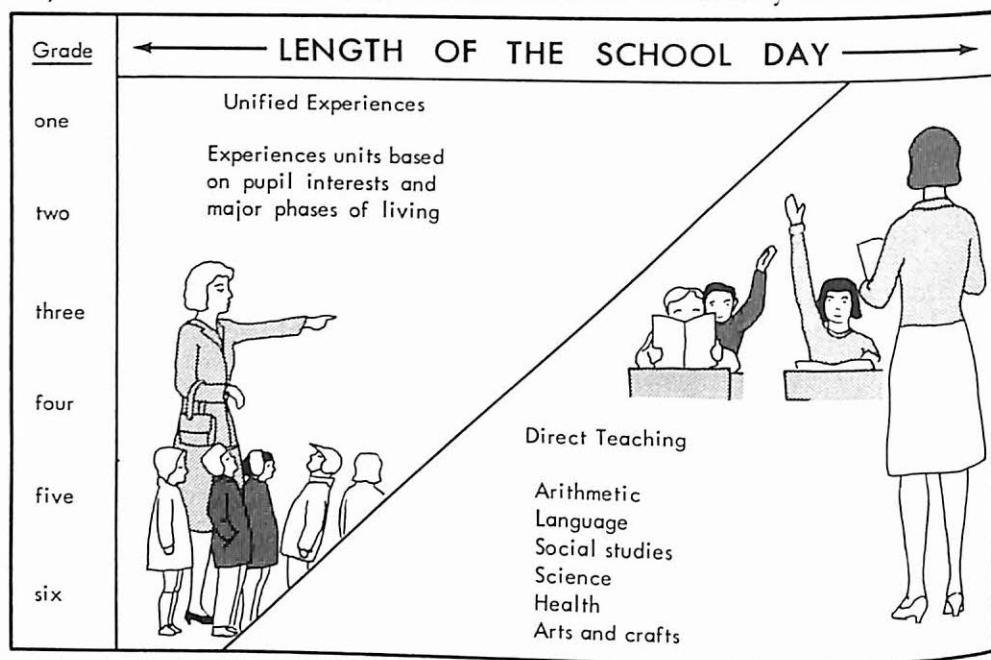
A NEW APPROACH TO SCHEDULING

The extent to which the teacher is free to provide a balanced day of living for children depends largely upon the policy followed in the school in regard to daily schedules. Consequently, an examination of the daily schedule will reveal whether subjects or the needs of children come first in that school. In schools in which the characteristics and needs of children are studied first and the schedule made to harmonize with them, longer time periods are provided for unit teaching, the timetable is more tentative, and fewer brief periods are marked off by class bells. The daily schedule is planned by the teacher and the children in the light of the activities to be carried on and is flexible enough so that adjustments can be made from time to time.

Hildreth has developed an excellent program for unified teaching which provides for unit-work periods and also for the teaching of the fundamental skills.

The new trends in the daily schedule were summarized by Hildreth as follows:

1. Blocks of time, double or treble the usual amount of time reserved for lessons in formal subject teaching, are scheduled for planning and working on unit activities. A short period is disadvantageous because it requires a fresh start later with much lost motion.

2. There is more flexibility in the program to allow for shifts in emphasis, temporary problems, new features which may develop from day to day.

3. There is more variability in the program from day to day and week to week; but changes that would interfere with the smooth functioning of the entire school are arranged through the central administrative office.

4. There are more periods during which the individual children within a class group work at different projects.

5. The nature of the particular program worked out depends upon the ages of the children, the time of year, and local conditions.

6. Instead of strident bells whose jangle interrupts work at inconvenient times, there is a large, well oiled clock in plain sight which both teacher and children consult. In fact the children assume responsibility for indicating the time previously determined upon to terminate a work or study period.[14]

SCOPE AND SEQUENCE IN THE UNIFIED PROGRAM

If the purposes of the program of unified teaching are to be achieved, attention should be given to the selection of areas of experience to be included in the program and to the sequence of the specific experiences. The plans for meeting this problem differ considerably from school to school but, in general, the scope is determined by the basic activities in which human beings engage, the values the society fosters, and the major problems it faces. The sequence is determined on the basis of the development needs of children living in a certain environment.

No school or teacher can borrow and use uncritically the plan used in another school. The leadership in each school must provide continuous opportunity for the entire staff to study and discuss the demands of present-day living, the nature of child growth and development, and the learning experiences that will enable every child to meet the problems he faces individually and as a member of a society. However, an examination of the programs developed in several schools may be of real value to the local staff in planning the over-all framework of the curriculum.

The Educational Policies Commission report, *Education for All American Children*, contains an excellent summary of the scope and sequence used in several elementary schools.[15] According to this report, the elementary schools in Rochester, New York, Newton, Massachusetts, and Battle Creek, Michigan, emphasize geographic or historical interests, as follows:

First year: human activities suggested by the life of the children's homes and their schools;

Second year: the neighborhood of which the school is the center;

[14] Gertrude Hildreth, *Child Growth through Education* (New York: The Ronald Press Company, 1948), pp. 127–128.

[15] Educational Policies Commission, *Education for All American Children* (Washington, D.C.: National Education Association, 1948), pp. 225–226.

Third year: the local community;
Fourth year: the state;
Fifth year: the United States;
Sixth year: the Western Hemisphere or the entire globe.

The elementary schools in Crawford County, Pennsylvania, Topeka, Kansas, San Francisco, California, and the state of Arkansas stress comparisons between those cultures using mechanical power and complex machines and those cultures using muscle power and simple tools. The following sequence is suggested:

First two years: activities of home, school, and neighborhood;
Third and fourth years: human activities in simpler communities;
Fifth and sixth years: our contemporary world community. How the food we eat, the music we enjoy, the news we read result from the application of modern technology to the full range of the earth's resources.

In many schools the social studies have formed the basis for the unified-studies program, in others science, health, and the arts and crafts have been included; still other schools have used significant problems of living that have meaning for children, without much concern for keeping experiences within the boundaries of any conventional school subject.

Hildreth made the following suggestions in regard to the selection of units for the unified program:

Most schools where unified teaching has prevailed for some years tend to plan the year's work around units that have stood the test of thorough trial. After several years' experience with a unit, the school begins to build up a library and stock of materials that insure success in teaching the unit. Consequently, it is more convenient and economical to develop certain units over and over, at the same time maintaining flexibility and variability, and avoiding ritualistic treatment that results from planning the entire unit in advance. In most experimental laboratories and new type schools a basic sequential pattern for unit teaching is followed through the grades. In the primary grades they move out into the neighborhood and the community in ever-widening circles; then they spread to distant places, foreign lands, and historical eras, at still higher levels.[16]

The possibilities for teacher initiative in developing units of work centering around significant problems of living, utilizing the interests of children in local events and situations, and meeting the growth and development needs of children will be discussed in the next chapter. The direct-teaching phases of the instructional program will be presented in Part Three of this book.

It should be emphasized here that the direct-teaching phase is closely related to the unified program so that knowledge and skills for which the

[16] Hildreth, p. 92.

child finds a need in the unit of work can receive systematic attention in the portion of the school day devoted to the teaching of subjects. Moreover, devoting a portion of the school day to the teaching of school subjects does not mean that these subjects must be taught in a formal, abstract, and meaningless fashion. The teaching of school subjects has been influenced greatly in recent years by (1) the elimination of content and skills that do not function in everyday life, (2) the substitution of broad fields of experience for isolated subjects, (3) recognition of the contributions a subject can make to the personality development of the child, (4) the development of readiness before the actual teaching of a topic begins, (5) adjustment of the work to the maturity level of pupils, regardless of grade standards, (6) a great increase in the number, variety, and quality of books and other instructional materials, (7) comprehensive, continuous, and cooperative evaluation of pupil progress, and (8) the development of curriculum guides for each area of experience by local communities.

CURRICULUM ORGANIZATION AS A PANACEA

It was suggested earlier in this chapter that changing the form of curriculum organization does not of itself improve the elementary school program. It should be emphasized that the essential features of a good elementary school include the following: good teachers, good buildings, good instructional materials, good leadership, good curriculum organization, and good community relations. Efforts to improve the organization of the elementary school curriculum will produce better educational opportunities for children only to the extent that they are accompanied by improvements in teacher education, including a minimum of five years of professional preparation, increased salaries for elementary school teachers, reduced enrollments per teacher, better financial support for elementary school building programs from local, state, and federal sources, and the same degree of personal freedom and community respect for teachers as that accorded to physicians and other competent professional people.

SUMMARY

1. The organizing of learning experiences so that each experience will fit into a larger whole and contribute to the development of those behavior traits that are essential in our kind of society represents an important phase of curriculum improvement.

2. Planning the general framework of the curriculum involves an understanding and general acceptance on the part of the staff of what they expect to do for the boys and girls who attend the school.

3. No plan of curriculum organization can produce good results without

competent teachers; however, the work of excellent teachers can be hampered by a curriculum organization that does not permit the full use of their talents.

4. The curriculum organization should (a) be based on continuous, cooperative study and planning, (b) provide a well-balanced day of living for children, (c) provide for continuity and sequence in the learning experiences of the child, (d) facilitate the orienting of the child to the life about him, (e) provide for unified learning, (f) provide for the development of fundamental skills, and (g) provide for pupil participation in curriculum planning.

5. General types of curriculum organization include (a) separate subjects, (b) correlation, (c) fusion and integration.

6. The integrative curriculum may take the form of (a) the child-centered curriculum, (b) the social-functions curriculum, or (c) the experience curriculum.

7. The important concern is not what label is attached to the curriculum organization but whether the structure permits instruction and activities that serve the objectives of the school.

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lum. Columbus, Ohio: Charles E. Merrill Books, Inc., 1963. Chapter 1, "The Emerging Curriculum Design," is particularly useful.

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Taba, Hilda, *Curriculum Development: Theory and Practice*. New York: Harcourt, Brace & World, Inc., 1962. Chapter 21 examines current patterns of curriculum organization.

SELECTED FILMS

Characteristics of a Core Program. A twenty-minute sound film, explaining how the core program works. (Teachers College, Columbia University)

Curriculum Based on Child Development. A twelve-minute sound film, explaining how a good teacher uses the characteristics of elementary-age children in providing materials and planning classroom activities. (McGraw-Hill, Inc.)

Design of American Education. A sixteen-minute sound film, explaining the organizational structure of American public education; how schools provide for individual differences; and the central role of the teacher. (McGraw-Hill, Inc.)

Photo Comment

THE DISCOVERY METHOD

In the so-called discovery method of teaching, one of the chief responsibilities of the teacher is to provide the setting for problem solving within which children can discover their own solutions. The drawing below illustrates an approach used by one teacher to encourage children to discover basic concepts in science. The pupils were fascinated by the sight of goldfish swimming about in a sealed bottle.

Questions came back thick and fast: How long can the fish live sealed in the bottle? How does the fish get more air over a period of time? Why doesn't the fish starve? Does the fish eat the snails? Do plants need air to keep alive? Is air necessary for water forms of life?

After several days (during which the pupils began to bet on how long the goldfish would live), the teacher began science class by referring to the questions on the board and countering them with the question, "What does a fish do to maintain itself when not sealed in a bottle?" The suggestions offered by the class, which were in reality an analysis of the problem, included such statements as: it must respire; It must eat; It must

get rid of wastes; It must avoid enemies; it must avoid very unfavorable conditions of its environment. The class saw that if all of these conditions could be maintained in the sealed bottle the fish could live indefinitely.

For each of the conditions necessary for life, the pupils proposed hypotheses directly related to the goldfish in the sealed container. Some of the hypotheses proposed to explain how the fish was able to take in oxygen were:

1. Water has oxygen in it; fish take in water and can get oxygen in this way.

2. Sunlight acting on water forms oxygen.

3. Only air-breathing animals use oxygen.

4. There is a very slow passage of air through the glass of the bottle which is sufficient to replace that used in the fish.

5. Minerals in the sand dissolve in the water, giving off oxygen to the air and water.

6. The plants give off enough oxygen for the fish to live, and use up the carbon dioxide that the fish give off.

Similar lists of hypotheses were prepared for the other conditions necessary for the maintenance of life. Each hypothesis was discussed and some discarded as not worth testing. Hypotheses that provoked considerable argument were retained and the pupils devised experiments to test each one separately. To test Hypothesis 1 for example, three pint-size and three quart-size fruit jars with self-sealing lids were procured and one pint of water added to each jar. In the water of each jar were placed two small goldfish. The jars were then all sealed tightly and set on a table. This was done early in the morning and by three P.M. the pint jars contained four dead fish and two that were apparently nearly suffocated. The three quart jars, half-filled with water and half-filled with air, contained six fish that seemed to be in a normal condition. Two of these quart jars were kept closed and the third was opened and all were left until the following day. At that time all the fish in the closed jars were dead while those in the one that had been left open were alive. The class accepted this experiment as sufficient evidence that oxygen is a vital factor in respiration of fish and that oxygen can be taken in from the water, or air can be gulped from above the water.

Teaching methods like these unquestionably foster the development of those intellectual skills needed by laymen as well as scientists. In the several weeks in which they pursued their study, pupils learned to question, observe carefully, keep accurate records, keep an open mind, challenge each other's statements, test rigorously, and evaluate evidence.

Problems and Projects

1. One of the problems besetting curriculum workers today is that of what should be the nature of compensatory education. Here are some of the solutions presently being tried out:

ENRICHMENT

Schools organizing the curriculum on the principle of enrichment attempt to make up to children for those educational experiences outside of school participated in by the middle classes but not by children who are poverty stricken. In such schools children take rides on a train, visit airports, parks and zoos, attend concerts, and see art exhibits.

ADJUSTMENT

Under curriculum adjustment, teachers attempt to gear the level of instruction to achievement level of pupils. Thus a fifth-grade class might be exposed to typical third-grade content under the adjustment principle in such subjects as reading, social studies, and science.

MATCHING THE DEFICIT

Some schools, particularly in preschool–primary, are attempting to match instruction to specific deficits. Since language is one of the chief deficits, special instruction is provided to build vocabulary, and to develop syntax and concepts. In teaching reading, basal texts especially prepared for disadvantaged children are used. In health, special emphasis is placed upon nutrition.

According to the philosophy set forth in this text, the third solution is the preferred one. Explain why. Use material from articles written about each approach in your explanation. You can locate articles on the education of culturally disadvantaged children in Education Index and Psychological Abstracts.

2. The spiral plan of organizing content is one that seems peculiarly well suited to such subjects as science, arithmetic, and the social studies. Under the spiral plan, concepts introduced in elementary fashion in one of the lower grades are reviewed and treated in increasingly more sophisticated fashion every other year or two. Careful attention to sequence of concepts is essential for this method of organizing content. Teachers must know to which learnings children have been exposed to date, and which learnings constitute the next logical steps in the spiral.

Here are some learnings to be developed in connection with a study of plants in grade two:

    a. While animals can move about to get food, plants stay in one place and must get food in that place in order to live.

    b. The plants most familiar to children are those in the flowering seed group; these plants have roots, stem, green leaves, and flowers.

    c. Each part of the plant is structured to serve a particular function.

    d. In flowering seed plants, the flower develops into fruit that contains a number of seeds; new plants grow from seeds.

From your college courses in botany and examination of courses of study for elementary schools, plan the learnings to take pupils further in their development of concepts as they study plants in grades four and six. If possible, check your list with a botanist to make sure that you are emphasizing important concepts and increasingly difficult ones.

3. The extent to which state legislatures mandate specific instruction should be of concern to students of education, though often the extent of the mandate is little known. There has been a tendency for politicians and pressure groups to remedy problems by passing laws requiring specific instruction. As a result, laws in many states require that the schools teach the evils of tobacco, alcohol, and Communism, and that instruction include flag etiquette, physical exercise, and state history and civics. In some cases, the law specifies a separate class period of a minimum number of hours.

What does your state legislate with respect to curriculum? Can the content prescribed by law be integrated into the unified program described in this chapter? List the prescribed learnings and tell how integration might be accomplished.

4. In the 1940s and early 1950s, the concern of educators was over how to organize learning experiences. After Sputnik, the emphasis was shifted from how to organize to reform in content and expansion of the curriculum to include languages and science. Today we see a broadening of concern both for the social role of the school as reflected in compensatory education and for curriculum revision as the joint enterprise of educators and university scholars. This latter concern (curriculum revision) has resulted in the production of a number of teaching materials in separate subjects: economics, history, mathematics, and science.

Examine some of the new curriculum materials available in your curriculum library. Those produced under the direction of R. Karplus as part of the Science Curriculum Improvement Study are one example. Does the use of these materials, produced as a separate subject, mean a return to a subject-matter form of organization, or can and should the materials be used as part of an integrated curriculum? If the latter, how can they be so used? State specifically how language arts and other content areas can be related, with specific suggestions for each topic in the revised curriculum.

Organizing the Class
for Living and Learning

Curriculum improvement involves many types of activities. The school
staff examines research dealing with factors that influence learning, experi-
ments with techniques for gaining a better understanding of children, ana-
lyzes recent social trends, and makes surveys of the local community. It
formulates lists of educational objectives, evaluates instructional materials,
prepares curriculum guides, and develops the over-all design of the curriculum.
These activities are, however, merely means to an end—the improvement of
living and learning in the classroom. It is in the individual classroom that the
actual improvement of the curriculum takes place.

The quality of living and learning that goes on in elementary school
classrooms is intimately connected with the strength and unity of this nation.
Since dictators have demonstrated that the schools can be used as effective
instruments for developing, in a half century or less, a nation of individuals
loyal to totalitarian ideals, it follows that faith in democracy and capacity for
participating in cooperative group enterprises must be developed in our
schools if the American way of life is to survive.

Traditional classroom procedures, embodied in what is generally known
as the recitation method, are ill suited to the achievement of the objectives
of democratic citizenship. If the elementary school is to fulfill its mission as
the front line of American democracy, we must discover the methods of de-
mocracy and put them to work in classrooms.

THE FOUNDATIONS OF MODERN TEACHING METHODS

The procedures involved in what is commonly known as the recitation method have for several decades been recognized as inadequate to meet the demands upon the elementary school. In 1928 Thayer pointed out that these procedures were based upon a psychology of learning no longer accepted, out of harmony with the broader objectives of education, and inconsistent with our fundamental democratic aspirations.[1] Since that time much progress has been made in incorporating into instructional practices the implications of the newer psychology of learning, in broadening the objectives of elementary schools, and in placing more emphasis upon democratic living in the classroom. The following outline is based upon the assumption that these three factors, which have been given attention in preceding chapters, provide the fundamental sources to guide teachers in making decisions in regard to methods.

Principles of Method Based on the Newer Psychology of Learning

1. Method should utilize the present interests of pupils and stimulate the development of further interests.
2. Method should encourage the pupil to establish worthwhile goals toward which to work.
3. Method should provide opportunities for developing the latent creative abilities of pupils.
4. Method should make provision for individual differences in abilities, interests, and backgrounds of pupils.
5. Method should utilize opportunities for learning through the use of concrete materials.
6. Method should provide for the development of basic skills through use in meaningful situations.
7. Method should provide experiences closely geared to the maturity level of the child.
8. Method should reflect an understanding of the broader concept of learning as the modification of behavior.

Principles of Method Based on the Democratic Ideal

1. Method should provide for teacher-pupil cooperation in planning, executing, and evaluating.
2. Method should provide for a proper balance between pupil freedom and teacher guidance.
3. Method should provide for pupil participation in the solution of problems arising in connection with school living.

[1] V. T. Thayer, *The Passing of the Recitation* (Boston: D. C. Heath and Company, 1928), p. iii.

4. Method should provide opportunities for the pupil to develop skill in group processes.

5. Method should provide for the stimulation of individual effort through the use of group approval.

6. Method should provide opportunities for pupils to make decisions and assume responsibilities.

7. Method should provide for the gradual development of self-direction on the part of pupils.

Principles of Method Based on the Broader Objectives of Elementary Education

1. Method should be concerned with all aspects of child development.
2. Method should provide a well-balanced program of activities for pupils.
3. Method should provide for orienting the child to his community, his nation, and the world.
4. Method should promote security and satisfaction for every child.
5. Method should reflect an understanding that the fundamental skills are broader than the three Rs.
6. Method should reflect an understanding that teaching the fundamental subjects such as reading, writing, and arithmetic involves the development of attitudes, appreciations, and understandings, as well as knowledge and skills.
7. Method should facilitate the development of logical intelligence.

IMPROVING INSTRUCTION

One facet of educational reform that has been receiving a great deal of attention for more than a decade is improving the quality of instruction. The urge to have the schools make a maximum contribution to the strength of the nation, the realization that inadequate education of children and youth represents a tremendous economic loss for the nation, the quest for excellence in all aspects of American life, and the persistent criticisms of schools are some of the factors that have accounted for the renewal of interest in improving instruction.

The educational movement that has been called the "revolution in instruction" has taken many forms; participation in the movement has ranged from an individual making a study of a single phase of instruction to the Projects on Instruction of the National Education Association.[2] Space is available here for only a brief presentation of a few aspects of the movement. The student who is interested in gaining a comprehensive view of the movement will need to examine dozens of documents ranging from brief articles in

[2] See Project on the Instructional Program of the Public Schools, *Education in a Changing Society* (1963); *Deciding What to Teach* (1963); and *Planning and Organizing for Teaching* (Washington, D.C.: National Education Association).

educational journals to the *Handbook of Research on Teaching*, which is more than 1200 pages in length.[3]

Developing a Theory of Instruction

The use of the terms "theory" and "theories" in relation to the process of education is not new. Titles such as *Theory and Practice of Teaching* and *Theories of Learning* have been used freely in educational literature for many decades. Activity in the area of theory building has, however, been increasing in recent years, particularly in educational administration, curriculum, and instruction.

Efforts to develop a theory for the various facets of the educational enterprise have generally centered around common themes: the meaning of a theory, the relationship of theory to practice, the essential characteristics of a valid theory, and the functions performed by a carefully developed theory. A few writers also offer a model or a tentative theory.[4]

Writers use the terms *general principles*, *guidelines*, *frame of reference*, *postulates*, and *assumptions* to explain what they mean by a theory. For example, "The term 'theory' is often used to mean general principles which seem to predict or account for events with an accuracy so much better than chance that we may say that the principles are 'true.' "[5] Bruner contends that a theory of learning is not a theory of instruction; that the former is descriptive while the latter is prescriptive. He says, in discussing a theory of instruction:

> It is not a description of what has happened when learning has taken place—it is something which is normative, which gives you something to shoot at and which, in the end, must state something about what you do when you put instruction together in the form of courses.[6]

One of the difficulties in theory development in any area is the tendency of school people to think of theory and practice as separate entities—to think of theorizing as an impractical activity engaged in by persons who are far removed from practical situations. Those who are concerned with developing a theory of instruction and with making it operational in classroom situations, therefore, point out that theory and practice are interrelated aspects of the teacher's behavior and that without guiding principles teaching can be only

[3] N. L. Gage (Ed.), *Handbook of Research on Teaching* (Skokie, Ill.: Rand McNally & Company, 1963).

[4] See Arthur P. Coladarchi and Jacob W. Getzels, *The Uses of Theory in Educational Administration* (Stanford, Calif.: Stanford University Press, 1955); Daniel E. Griffiths, *Administrative Theory* (New York: Appleton-Century-Crofts, 1959; George A. Beauchamp, *Curriculum Theory* (Wilmette, Ill.: The Kagg Press, 1961); and Jerome S. Bruner, "Needed: A Theory of Instruction," *Educational Leadership*, May 1963, pp. 523–527.

[5] Coladarchi and Getzels, p. 4.

[6] Bruner, pp. 523–524.

accidentally successful. The teacher, like all human beings, is constantly making decisions. Moreover, he makes these decisions within a frame of reference. When his frame of reference is explicit and examinable he is said to be using "intelligent method." When the teacher acts in conformity with guiding principles he is testing his theory; the theory is formulated, tested in practice, and better theory is formulated.

Bruner has stated that, in developing a theory of instruction, "Unfortunately, we shall have to start pretty nearly at the beginning, for there is very little literature to guide us in this subtle enterprise." [7] He believes that a valid theory of instruction must concern itself with the factors that predispose a child to learn effectively, with the optimal structuring of knowledge, with the optimal sequence that is required for learning, and with the nature and pacing of rewards and punishments.

A theory of instruction serves several functions; it tends to maximize intelligent behavior on the part of the teacher in several ways. It is sufficient to mention two of the most obvious ones here. It supplies some guiding principles concerning what needs to be done to achieve certain objectives. Instead of merely following tradition, accepting without question the opinions of authorities, or using hit-and-miss procedures, the teacher behaves in harmony with a carefully developed theory of instruction that is at least tentatively held. A valid theory of instruction also enables the teacher to present a structure of knowledge that is appropriate for the child; instead of merely presenting a mass of information relating to a school subject, the teacher helps him to develop a minimal set of propositions so that he can generate the power to explore the subject on his own. "You take the child where you find him and give him the structure that is economical, productive and powerful for him and that allows him to grow." [8]

Exploring the Role of the Teacher

The term "role" is used here to mean the set of expectations applied to a person who occupies a particular position in a social system or in an organization. The techniques of role analysis, used extensively in research in social psychology since World War II, are now being used in educational research, particularly in school administration and instruction. [9] Rose has called attention to the advantages of this approach as follows:

The concept of role provides a natural basis upon which to view teaching behavior. It is task-oriented; it is function-oriented. It is behavior-oriented

[7] *Ibid.*, p. 524.
[8] *Ibid.*, p. 525.
[9] See Neal Gross, Ward S. Mason, and Alexander McEachern, *Explorations in Role Analysis: Studies of the School Superintendency* (New York: John Wiley & Sons, Inc., 1958).

not in a general sense but in terms of the job to be done. It is concerned with behavior relevant to the effects desired. Thus it is a useful tool in the hands of teachers and students of teaching.[10]

The need for a more accurate definition of the professional role of the teacher can be seen by looking first at current practice in school systems and then at teacher-education programs in colleges and universities. Technological advances have shortened the work week for industrial workers; educational research has, on the other hand, increased the responsibilities of teachers and required them to lengthen the work day and the work week. In some school systems such chores as policing hallways and playgrounds, supervising lunchrooms, making out complicated attendance reports, collecting money for various purposes, serving on committees, visiting the homes of all the pupils, and a host of other demands leave little time for the professional work for which the teacher was employed and for which the teacher alone is qualified. It has been estimated that nonteaching chores take up 26 percent of the teacher's working day. Many school systems have realized that such unrealistic role expectations serve as positive deterrents to high quality instruction and have taken steps to provide a better environment for teaching. Providing clerical help, reducing class size, employing specialized school personnel, providing teacher aides, providing better instructional materials and teaching aids are steps in this direction.

Teacher education is another facet of the current effort to improve instruction in which role analysis is receiving much attention. Although much of the effort to improve teacher-education programs is still devoted to raising standards for admission to teacher-education programs, to "upgrading" certificate standards, and to increasing the number of years of preservice education, there is increasing recognition that these concerns represent only one phase of the problem. The need for a teacher-education program designed to establish in the students those patterns of behavior needed to perform effectively the tasks involved in actual classroom situations has been emphasized in several publications.[11]

A most interesting discussion of the preparation of teachers calls attention to a number of functions that teachers must perform for which they receive inadequate preparation in preservice education programs: (1) talking with a parent, (2) working with several groups simultaneously in the classroom, (3) engendering interest in the world of ideas, (4) developing problem-solving abilities, (5) dealing with questions raised by pupils, (6) dealing with problems of discipline, and (7) recognizing and making adequate provision for

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[10] Gale W. Rose, "Performance Evaluation and Growth in Teaching," *Phi Delta Kappan*, October 1963, p. 51.

[11] See Gage, pp. 452–467; Rose, "Performance Evaluation and Growth in Teaching"; and Seymour B. Sorason, Kenneth Davidson, and Burton Blatt, *The Preparation of Teachers: An Unstudied Problem in Education* (New York: John Wiley & Sons, Inc., 1962).

individual differences.[12] The study is concerned primarily with teaching in elementary schools. The authors examine the assumption, now receiving a great deal of attention, that the quality of instruction in elementary schools can be improved merely by requiring prospective teachers to take more courses in the liberal arts and sciences. They conclude that this assumption is not supported either by observation or by scientific evidence.[13] They agree that teachers should be liberally educated persons, but they contend that the primary tasks of the teacher are to stimulate, to impart knowledge to, and to help children acquire intellectual skills—tasks that do not depend entirely on the teacher's knowledge of certain content areas. They maintain that day-by-day observation of the tasks teachers perform will result in increased recognition of the teacher as an applied psychologist concerned with the learning process.

Evaluating Teacher Effectiveness

Parallel with efforts to develop a theory of instruction and to clarify role expectations of the teacher, recent years have witnessed some notable efforts to refine and extend methods used to evaluate teacher effectiveness; one document, published in 1961, reports the findings of 83 investigations of teacher effectiveness and lists 104 data-gathering devices used in the investigation.[14] A comprehensive summary of recent developments in this phase of education is beyond the scope of this section. However, current efforts to improve the quality of instruction cannot be understood without some reference to fruitful efforts in the area of evaluating teacher effectiveness.

Most efforts to evaluate teacher effectiveness recognize that the ultimate criterion is the effect that the teacher has on the behavior of the pupils. Much of the earlier work in this field was ineffective for several reasons: the teaching function was inadequately defined, it was assumed that all effective teachers had certain personal traits in common, and it was assumed that administrators could come up with ratings on these traits which would add up to an accurate picture of over-all teacher effectiveness. As early as 1929, Charters and others suggested twenty-five personality traits as prerequisites to effective teaching.[15] Barr and others have reduced this list to fifteen: buoyancy, considerateness, cooperativeness, dependability, emotional stability, ethicalness, expressiveness, flexibility, forcefulness, judgment, mental alertness,

[12] Sorason, Davidson, and Blatt, *The Preparation of Teachers: An Unstudied Problem in Education.*

[13] For additional evidence on this issue see Elizabeth L. Dalton, *What Makes Effective Teachers for Young Adolescents?* (Nashville, Tenn.: George Peabody College for Teachers, 1962).

[14] A. S. Barr, and others, *Wisconsin Studies of the Measurement and Prediction of Teacher Effectiveness* (Madison, Wis.: Dembar Publications, Inc., 1961).

[15] W. W. Charters and Douglass Waples, *The Commonwealth Teacher-Training Study* (Chicago: University of Chicago Press, 1929).

objectivity, personal magnetism, physical energy and drive, and scholarliness.[16] It seems obvious that these traits are not subject to objective measurement and that administrators who are faced with the responsibility of rating teachers on this basis will generally do so on the basis of subjective judgment.

Recent efforts to evaluate teacher effectiveness differ in significant respects from the earlier work in this field. First, the idea that teaching is a mysterious art that cannot be studied objectively is being challenged. Second, it is no longer accepted that the effect of the teacher on the behavior of pupils cannot be evaluated profitably until the pupils have lived their entire lives. Third, recent programs attempt to identify the professional roles that teachers are expected to play in actual school situations and to evaluate teachers in terms of effective performance of these roles. Fourth, a great deal of research is being devoted to the effort to determine the effect of certain patterns of teaching on the performance of pupils.

A few illustrations of the emphasis in recent efforts to evaluate teacher effectiveness will add meaning to the summary statement in the previous paragraph. Raths, for example, assumes that there are twelve functions that are of great importance in almost every teaching day. He believes that teacher-education programs should concentrate on these functions, that teachers should be observed with these functions in mind, and that teachers themselves should be looking at their own work with these functions in mind. He believes that the data should be used as a basis for improvement and that it would be unfortunate if teachers were rated by some only in these terms. The functions of teaching Raths identifies and explains in detail are:

1. Explaining, informing, showing how;
2. Initiating, directing, administering;
3. Unifying the group;
4. Giving security;
5. Clarifying attitudes, beliefs, problems;
6. Diagnosing learning problems;
7. Making curriculum materials;
8. Evaluating, recording, reporting;
9. Enriching, community activities;
10. Organizing and arranging classroom;
11. Participating in school activities;
12. Participating in professional and civic life.[17]

Although questions can be raised concerning some of the teacher functions included in Raths' list, he does illustrate the current trend toward evaluating teacher effectiveness in terms of the performance of functions that teachers are expected to perform.

[16] A. S. Barr, and others, pp. 135–136.
[17] Louis Raths, "What Is a Good Teacher?," *Childhood Education*, May 1964, pp. 451–456.

A great many studies have been made recently in an effort to determine the effect on pupil behavior and achievement of types of teacher–pupil transactions within the classroom and to identify effective patterns of teaching. White and Lippitt conclude that democracy appears to be the most efficient procedure if democracy is sharply differentiated from laissez-faire, "with clear acceptance not only of active leadership but also of the firm use of authority when firmness is called for, and explicit delegation of authority to certain individuals when such delegation is appropriated." [18]

Spaulding conducted a study of teacher–pupil transactions in a sample of fourth- and sixth-grade classrooms. He found significant positive correlations between height of self concept on the part of pupils and the degree to which teachers were calm, acceptant, supportive, and facilitating; that pupils made significantly fewer gains in reading and performed less well on tests of originality where teachers were dominating or threatening; and that democratic classroom procedures are efficient only when the elements of structure and control are present.[19] Sloan and Pate reported a study of teacher–pupil interaction differences between classes taught according to the School Mathematics Study Group and those taught in the traditional mathematics program. One significant conclusion from this study was that the SMSG teachers were somewhat more inclined to seek out spontaneous and creative responses.[20]

A notable effort to identify teaching functions from detailed analysis of actual teaching has been attempted by the schools in Provo, Utah.[21] This program, as well as many other studies which illustrate the newer approach to the evaluation of teacher effectiveness, are discussed in the article by Gale W. Rose to which reference has been made.

The remainder of this chapter is devoted to an analysis of some of the factors involved in organizing the class for living and learning, including (1) improving group living in the classroom, (2) improving the classroom environment, (3) developing discipline for freedom, (4) developing units of work, and (5) using instructional materials effectively.

Improving Group Living in the Classroom

The idea that the teacher has a responsibility for creating conditions for better group living in the classroom is one of the most challenging, exciting,

[18] R. K. White and R. Lippitt, *Autocracy and Democracy* (New York: Harper & Row, Publishers, 1960).

[19] Robert Lytton Spaulding, "Achievement, Creativity, and Self-concept Correlates of Teacher–Pupil Transactions in Elementary Schools" (Urbana, Ill.: University of Illinois, twelve-page manuscript, 1962).

[20] Fred A. Sloan and Robert T. Pate, "Teacher–Pupil Interaction Differences between School Mathematics Study Group and Traditional Mathematics" (Norman, Okla.: University of Oklahoma, manuscript, 1964).

[21] *Patterns of Effective Teaching* (Provo, Utah: Provo City Schools, 1961).

and pervasive concepts in modern education. The quality of group living makes the difference between an excellent teaching-learning situation and a poor one when evaluated in the light of democratic values. The teacher who understands the meaning of group dynamics and who uses the techniques of group leadership intelligently has solved many of the problems relating to the broader concept of method. This does not imply that these techniques are new or that there is any particular virtue in the term "group dynamics" as such. Many teachers have been using group processes successfully for years without knowing that the term existed. Other teachers have wondered why they have so much difficulty with groups, why their pupils seem to learn slowly, and why they have so many discipline problems. Teachers have always known that a child's behavior is different when he is a member of a group, that a group is something more than just an aggregation of individuals, and that there are good groups and groups that are difficult to manage. The term "group dynamics" seems to be a convenient expression for those principles and procedures that provide greater insight into and greater skill in the solution of problems of group management. As teaching becomes more highly professional, it is to be expected that new and more technical terms will be applied to various aspects of the teacher's work. Teachers, therefore, are making a greater effort than ever before to understand the implications of such terms as "group dynamics" and to help parents and other interested citizens see more clearly what such terms mean in relation to the effort to provide better educational opportunities for children.

The Meaning of Group Dynamics

Group dynamics refers to the study of what happens when human beings work in groups. It is concerned with discovering the extent to which human beings behave differently when they are members of a group than when they are alone; the factors that promote group productivity; and the techniques that are effective in group discussion, planning, and evaluating. It is concerned with helping individuals to understand what is happening in the group, to assume their responsibilities as group members, and to learn the techniques of group leadership.

Human relations has been the subject for research and experimentation in industry for several years. In an experiment conducted by the Western Electric Company several years ago it was found that the productivity of workers depended more upon social and psychological factors related to organization and management than upon external factors, such as physical working conditions. The experiment showed that changes relating to human relationships played an important part in determining how much work an employee did and how well satisfied he was in doing it.[22]

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[22] See F. J. Roethlisberger and W. J. Dickson, *Management and the Worker* (Cambridge, Mass.: Harvard University Press, 1939).

The study of the nature of groups, group processes, and group leadership is receiving increasing attention in books for school administrators and supervisors. It is recognized that the faculty of a school must represent more than a mere aggregation of individuals if the objectives of the modern elementary school are to be realized; the faculty must be bound into a closely knit social organization with common purposes, intense loyalties, and effective ways of working together. The administrator or supervisor must know a great deal about human relationships, group processes, and leadership techniques if he expects to direct his staff toward the accomplishment of the goals of education. Some of the techniques used for this purpose are discussed in Chapter 8.

The study of group dynamics has also had a profound influence on the methods of teaching used in modern elementary schools. Teachers have learned to use sociometric tests to determine the structure of human relationships within a given group of children and the degree of acceptance or rejection of each child by the group. They are learning the techniques for studying the group behavior of boys and girls and for fostering group discussion, planning, and evaluation. A rapidly increasing number of guides are available to teachers who are interested in improving human relationships in the classroom.[23]

Values Derived from Participation in Group Processes

Cooperative group work is essential to democratic living. A group of children around a conference table setting up goals, making plans, assuming responsibilities, or evaluating achievements represents an essential prelude to intelligent, responsible citizenship. Children learn from one another through sharing ideas; group action is more effective when several individuals have shared in the planning; individuals find a place in group projects for making contributions in line with special talents; and morale is higher when children work together cooperatively on group projects. This is not meant to imply that there is no place in the modern classroom for individual effort; there should be a time for both individual and group activity. However, effective group work is the phase that is usually neglected because the techniques for directing this phase of the program are more difficult to master than the techniques for working with individual pupils.

Although it is generally agreed that learning to work with others is an essential prelude to responsible, intelligent citizenship, teachers have not always selected the kinds of group activities that have been effective in achieving this goal. Curriculum content and activities are not selected solely on the basis of providing opportunities for pupils to work in groups; rather, learning

[23] See Helen Hall Jennings, *Sociometry in Group Relations* (Washington, D.C.: American Council on Education, 1948); Association for Supervision and Curriculum Development, *Group Planning in Education* (Washington, D.C.: The Association, 1945); and Ruth Cunningham, *Understanding Group Behavior of Boys and Girls* (New York: Bureau of Publications, Teachers College, Columbia University, 1951).

to work with others is a by-product that is attained as pupils work on many types of content and at many types of activities.

Some teachers use voting as a technique for training in democracy; they have pupils settle issues themselves by a majority decision. Some teachers may go so far as to set up a voting booth in the classroom because they feel that knowledge of voting procedures promotes democratic citizenship. Although such activities may be useful on occasion, they can hardly be depended upon to give pupils a clear understanding of the rights of self and others in a democracy. Pupils need also to learn about the historical evolution of human rights and responsibilities and then to have opportunities to practice democratic living in the classroom.

Pupils in modern elementary schools have many opportunities to work in groups in connection with practically every curriculum area. One example comes from a sixth-grade class that plans and publishes a newspaper. Standards for narrative and expository writing are developed in the language-arts class; a writing clinic is held once a week and devoted to the improvement of written expression; and time is also set aside for planning the details of production and the allocation of responsibilities. Omar Khayyam Moore has used the example of a first-grade class that published a newspaper as an example of what he calls the "responsive environment for learning." These pupils learned word construction, reading, writing, and other skills in an enterprise that they regarded as their own.[24]

The Teacher Knowing How to Organize

When the primary purpose of the elementary school is regarded as the mastery of the knowledge and skills relating to the three Rs, and when the aristocratic philosophy of selection and elimination prevails, classroom organization is a relatively simple matter. Knowledge and skills considered important by experts in the various fields are selected and divided into quotas, with a certain quota assigned to each grade. The classroom teacher has only to organize the materials assigned to his grade in an orderly sequence and proceed to cover a certain amount of the content each week.

On the other hand, when learning is regarded as the modification of behavior, and when the democratic philosophy of educating each child to the fullest extent prevails, organizing the class for living and learning becomes one of the most difficult and at the same time one of the most crucial tasks confronting the teacher.

The effective teacher in the elementary school must, therefore, be somewhat of an expert in human relations, must be a good administrator, must know how to keep several groups working harmoniously and profitably, must

[24] Omar Khayyam Moore, "Autotelic Responsive Environments for Learning," in Ronald Gross and Judith Murphy, *The Revolution in the Schools* (New York: Harcourt, Brace & World, Inc., 1964), pp. 184–219.

have an intimate knowledge of each pupil's needs and abilities, must have a wide acquaintance with various types of resources for learning, and must have the ability to capitalize pupil's capacity for leadership and to enlist their wholehearted cooperation.

A yearbook of the Association for Supervision and Curriculum Development listed the following basic concepts of cooperative learning:

1. Cooperative learning begins with establishing rapport.
2. Cooperative learning gives pupils experience in setting up goals together.
3. Cooperative learning provides an opportunity for pupils to plan and develop experiences to achieve their objectives.
4. Cooperative learning encourages all concerned to make group decisions and assume responsibility for those decisions.
5. Cooperative learning provides for a division of responsibility among individuals and small groups.
6. Cooperative learning gives pupils an opportunity to gather and distribute materials.
7. Cooperative learning extends beyond the classroom.
8. Cooperative learning provides for group evaluation of progress toward goals.[25]

The teacher's time and effort spent in establishing rapport during the first few days pay large dividends later. One purpose of this effort is to establish a friendly relationship in which each child regards the teacher as a helpful and trusted member of the group who is really interested in him as a person. Another purpose is to provide opportunities for pupils to know one another and to build a framework of mutual understanding and trust, without which effective group work is impossible. Good teachers go about the job of establishing rapport in many ways. Studying individual records before meeting the group for the first time, talking with individual pupils or small groups informally as time permits, observing children on the way to school or on the playground, recognizing individual interest and talents, encouraging children to talk freely about out-of-school interests and experiences, choosing wisely the words she uses, and being able to call each pupil's name without hesitation are some of the ways in which the teacher can help to create an environment for cooperative learning in the classroom.

Children need help from the teacher in setting up group goals. Although the goals will have more meaning if children express them in their own words, it is necessary for the teacher to help them decide what they are going to do and how they are to begin. The group will need assistance in finding ways to integrate individual aims with those of the group. Usually a way can

[25] Association for Supervision and Curriculum Development, *Toward Better Teaching* (Washington, D.C.: The Association, 1949).

be found to help the individual realize his personal goals while he is contributing to the realization of the goals of the group.

Once individual and group goals are clear to members of the group, the teacher must help the group organize in ways to attain these goals. The class is usually divided into several committees for working on various aspects of the problem selected. Some teachers find it difficult to give the various committees enough freedom to work out their problems in their own way; others fail to give them enough guidance, and the result is chaos. The teacher should be sure that necessary materials are available and that the children know where and how to obtain them. Certain members of the group may take responsibility for distribution of materials and for keeping a record of materials used. In any case it is well to remember that children learn to plan only through planning and that experiences in cooperative planning can yield valuable learnings.

One important factor in the success of a group is leadership. The members of the group need help in choosing the group leader wisely. The leader needs help in understanding the functions of the leader. The film *Broader Concept of Method*, listed at the close of this chapter, illustrates how the teacher can help a pupil understand what a leader is expected to do.

Group processes are, of course, used by teachers in the U.S.S.R., but for different purposes. There, they are used to produce standardized behavior to serve the interests of a collective society. A democracy prizes the worth of the individual and pupils are expected to make their own unique contributions to group enterprises. In this framework, the growth of the individual, rather than standardized behavior is the end sought.[26]

IMPROVING THE CLASSROOM ENVIRONMENT

The education of the child is, in the broader sense, a function of the total environment. Attention was given, in Chapter 3, to several educative agencies other than the school which help to shape the lives of children. The school curriculum, although it utilizes the contributions of out-of-school agencies to enrich and make more meaningful the school living of boys and girls, is not as broad as life itself. Rather, it represents those experiences of children for which the school accepts responsibility—it is an enterprise in guided living. In the same sense, no classroom can be completely isolated from the influence of the school system, the home, the community, and the realities and ideals of the society in which the school exists. For the purpose of this discussion, however, the term "classroom environment" is used to mean those physical, intellectual, emotional, and social factors that directly

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[26] See Urie Bronfenbrenner, "Soviet Methods of Character Education: Some Implications for Research," in Celia B. Stendler (Ed.), *Readings in Child Behavior and Development* (second ed.; New York: Harcourt, Brace & World, Inc., 1964), pp. 262–271.

affect living and learning in the classroom. The classroom environment plays an important role in determining the quality of living and learning that is provided for children. The teacher has many opportunities to create with and for children a classroom environment that promotes cooperative group experiences through which children develop skills for living in a democratic society.

The Physical Environment

The physical environment of the classroom includes the location, size, shape, and construction of the room itself; the furniture in the room; the instructional supplies or resources for learning; the provisions for lighting, heating, and ventilating; the acoustics of the room, and the provisions for sanitation, cleanliness, and orderliness. Every teacher knows that the physical environment of the classroom in which he must work has certain advantages and disadvantages.

The teacher has the responsibility of examining carefully the assets and liabilities of the classroom and of planning to make the best use possible of the equipment he has. The staff of the elementary school must not assume that the physical environment of classrooms is the responsibility of the board of education, the superintendent, and the school architect. In this period of increasing enrollments in elementary schools, more new buildings are being constructed than ever before. Fortunately, the profession of school architecture is coming of age. The modern school architect realizes that he is not just planning a building; rather, he is planning a building for children. He does not begin by pulling from his files the plans for an elementary school building somewhere else and expecting the curriculum to fit into the type of building available. He begins by consulting teachers, children, and parents to find out what the objectives of the school are, what activities will go on in the school as a whole and in each of the various rooms. The building is planned to fit the needs and activities of the children.

The Intellectual, Social, and Emotional Climate

Everyone is familiar with the discomforts of the extremes of physical climate. But the climate outside is not as important to teachers and children as the climate inside the classroom. The climate of the classroom is more important than colored walls and chalkboards, than beautifully polished tables and chairs; more important even than an abundance of the latest instructional materials.

Most of us are familiar with different classroom climates, for we have visited rooms so lacking in friendliness that we call them cold or chilly. We have seen stormy rooms too, where the air was electric and we felt that a storm was about to break; and foggy rooms, where the teacher and the children were anxious, jittery, and uncertain. You feel, after a visit to such rooms,

that you have been in a foggy, misty, damp atmosphere and you are glad to get out into the fresh air again. Then there are rooms where you feel that you have just walked into a patch of warm spring sunshine, where the children are happy, good-humored, and secure as they work. These are the rooms in which the children find a sunny warmth of being appreciated for their own special abilities and skills; where the teacher is serene, patient, and happy. These rooms have a temperature climate which is right for the optimum growth of the child—a climate in which the learning process flourishes.

What can teachers do to foster an intellectual, social, and emotional climate in the classroom that will help pupils develop skills for living? What are the skills for happy, successful living with others? Although the intellectual, social, and emotional phases of child development are inseparable, it may be more convenient to consider them one at a time. The ability to think clearly, critically, and creatively is highly important for living. Thinking is not something children do only in school as they prepare arithmetic assignments or write examinations. Rather, it is something they have to do in order to meet the problems of living that they face both in school and in the life outside the school. It assumes increasing importance as children grow to adulthood and face the complicated problems of living.

What can teachers do to help children think clearly, critically, and creatively? First, teachers must understand that problem solving develops through several stages. Most of the problems that children face are in reality a collection of smaller problems, and teachers need to help children see that they really have not one problem to solve but several. The next step after recognizing the problem and breaking it down into smaller problems is to collect all of the facts that bear on the problem. Children need help in picking out the relevant facts and discarding the others; in forming tentative conclusions on the basis of the facts collected; in postponing a conclusion until sufficient facts have been collected; and in trying out the tentative solution to see whether it works. All of this means that the teacher is creating an intellectual environment in which children are free to work out under intelligent guidance the solutions to their own problems and thus grow in the ability to be intelligent, self-directing citizens. It represents the application to the classroom of the democratic principle of experimentation.

The social climate of the classroom is as important as the intellectual climate. Developing a desirable social environment in the classroom has been given increasing attention in recent years as teachers have gained a better understanding of the nature of the social heritage, the relation of the individual to the group, and the part the environment plays in forming the human personality.

Sociologists use the term "social heritage" to signify the knowledge, habits, techniques, mores, and institutions that are transmitted from one generation to another by means of social participation and formal education.

The home, the community, the church, and other educational agencies help the growing child to identify himself with the society of which he is a part, but the school is society's specialized agency both for promoting the social growth of children and for perpetuating and improving the culture. Thus the classroom becomes a laboratory in which the child studies, discovers, and enjoys the democratic way of life.

The importance of the classroom's social climate is understood more clearly when it is considered in the light of the relation of the individual to the group. Society is the necessary environment for the development of human personality; the individual is as intimately related to the environment as the seed is to the earth in which it grows. An infant abandoned by society and by some miracle enabled to survive would never develop the traits we consider human; it is only in society that we become human in any intelligible sense of the word. Thus the human infant is born with a social inheritance which, through the work of the school and other educational agencies, develops his mental equipment and personality. At the same time, the social heritage is reinforced and improved by the continuous social experience of the individual. Society does not repress individuality; it provides the social relationships in which individuality develops. Men are not "born free"; it is only through human relationships that men can attain freedom.

Children are social beings and grow best in a social climate that gives each a chance to contribute to his environment according to his ability. Growth in reading, writing, and arithmetic is no more important than social growth. In fact, these skills are, properly, the useful tools for better social living. The writing of letters, the recording of events, and the keeping of accounts are integral parts of daily living in the school which create a real need for writing, spelling, and using number skills. Growth in any skill becomes more functional when it takes its rightful place as a social rather than a mechanical development.

The school is better equipped than other educational agencies to provide an environment that fosters the social growth of children. The home contains too few children, is frequently located on busy streets or highways, and in many instances is planned and furnished for adults rather than for children. The school, on the other hand, is a place built specifically for children, with adult leadership that fosters the development of characteristics required for effective participation in group life.

In general there are three types of social climates existing in elementary school classrooms: autocratic, laissez-faire, and democratic. In the autocratic climate, the teacher makes all the important decisions, directs all the activities, and evaluates pupil progress in terms of arbitrary standards. Children find little opportunity in this type of climate for initiative, participation in group planning, or self-evaluation.

In the laissez-faire climate, each child operates as an individual, strives for recognition of his own achievements, and develops little regard for the rights and accomplishments of others. In this climate the human relationships are in terms of coaction rather than interaction; there is little emphasis on group living.

In the democratic climate, goals are established and plans are made on the basis of cooperative group planning. The role of the teacher is neither that of a dictator nor of an interested spectator. The teacher assumes the role of a mature person responsible for guiding the work of the children as they work out goals, plan activities, and evaluate achievements. Leadership is not regarded as the exclusive privilege of the teacher or of a few gifted children. It is a shared role; sometimes one and sometimes another acts as leader according to what the individual can contribute to the work of the group.

Emotional control is another important skill for living. The child who has good mental health can meet disappointments bravely, can remain good-natured under trying circumstances, can admit mistakes, and can forget offenses quickly. Good general health makes it easier for a child to develop emotional control. The child who is well nourished, who gets sufficient sleep, and whose general physical condition is good fares better in respect to emotional adjustment than the one who lacks these things. The school cannot provide the food and other essentials of good general health, but it is responsible for teaching the child the importance of health and for working closely with parents to see that the health needs of the child are given adequate attention.

The classroom climate has a great deal to do with the mental health of children. The teacher can do a great deal to see that the personality needs of the child are being met in the classroom. The child needs to feel secure in his group; the insecure child is a problem child. Children must have opportunities to make decisions and to become increasingly self-directing and the teacher can provide these opportunities. The school must also provide opportunities for wholesome play, for play will reduce emotional tensions when all else fails.

Even if children are in good health, feel secure at home and at school, and engage in wholesome play activities, they must still be taught to control their emotions. To get over emotional outbursts children have to learn that temper tantrums, crying, and feeling sorry for themselves will not work. If they have not learned this lesson before they come to school, they will have to find out by experience that having a pleasant disposition and trying to solve their problems in a reasonable way are most effective in relations with teachers and other children at school. Emotional control, like arithmetic, cannot be learned in a week. Teachers must work continuously at the job if children are to develop this important skill for living.

DEVELOPING DISCIPLINE FOR FREEDOM

The close relationship existing between the work of the public schools and the future of our democratic way of life places a heavy responsibility on the teachers of America. Teachers in our society must not only do a thorough job of teaching the fundamental subjects but must do so in such a manner as to produce the kind of citizens needed in a free society. To fulfill this obligation it is essential that teachers understand not only that discipline is necessary in any type of society but that the discipline required in a democracy differs from that required in a totalitarian regime. The discipline of a totalitarian regime is meant for slaves; the discipline of a democracy is meant for free men. The discipline that sustains the dictatorship would destroy a democracy. The danger that exists in America during these critical times, the danger of resorting to a type of discipline suited to a totalitarian regime, has been recognized by many intelligent and patriotic citizens. Democracy, no less than dictatorship, requires discipline. Without a disciplined citizenship, knowledge and material strength are to no avail. Indeed, the champions of despotism in all ages have been confident that the lack of discipline would prove the fatal weakness of democracies; to them freedom and discipline have been contradictory terms. It is imperative, therefore, that the special kind of discipline that is suited to free men be clearly understood not only by teachers but by members of the general public as well.

The term "discipline" has many meanings. We speak of mathematics, psychology, or history as a discipline, meaning a field of study or a school subject. We also think of discipline as the quality of the individual that causes him to restrain the impulses of the moment, to sacrifice immediate pleasures for the attainment of a purpose. Most adults realize that discipline, taking the harder way when an easier one is open, is a prerequisite to worthwhile achievement. When we say that a teacher has good discipline, we mean that she maintains order in the classroom. When we say we had to discipline a child, we usually mean that we had to punish him. Finally, when we speak of developing discipline for freedom, we mean providing experiences that will foster self-direction or self-control in the child. Democracy cannot survive without individuals who can sacrifice immediate interests to remote ends, who can sacrifice personal interests to the welfare of the group, who can exercise self-control to such an extent that social control becomes increasingly unnecessary.

Children cannot develop the discipline for freedom by being held under the complete domination of the teacher day after day and month after month; neither can it be achieved by "taking the lid off" and allowing children to do as they please. It can be achieved only by living in the classroom from day to day in accordance with the ways of democracy under the guidance of a teacher who understands how human behavior develops and who,

in his daily activities both in the school and in the community, practices the discipline of a free man.

Organizing the classroom environment deliberately to give children experience in democratic living and removing from the classroom those practices that stand as obstacles to the achievement of discipline for freedom are highly complex and difficult tasks. They are achieved by (1) gradually reducing the amount of teacher direction as children become more mature, (2) giving children many opportunities for planning, sharing, discussing, and evaluating activities, (3) encouraging children to assume an increasing amount of responsibility for the control of behavior in the room, (4) encouraging experimentation and problem solving, (5) fostering skill in self-analysis, (6) developing children's ability to make intelligent choices, and (7) providing enough teacher direction to give the children security and satisfaction. For the teacher in the modern elementary school, an understanding of the relationship between freedom and discipline is the beginning of wisdom; and the ability to foster self-direction determines his professional stature.

The concept of discipline as something that comes from within is by no means new, as the following quotation indicates:

> It is therefore clear that the discipline which reveals itself in the Montessori class is something which comes more from within than from without. But this self-discipline has not come into existence in a day, or a week, or even a month. It is the result of a long inner growth, an achievement won through months of training.[27]

DEVELOPING UNITS OF WORK

An examination of curriculum guides and of recent books dealing with curriculum and instruction reveals that the unit of work is widely used as a method of organizing the work of the class in elementary schools. Although there are differences of opinion concerning the meaning of the term, its essential characteristics, and the methods that should be used in selecting and developing units, the idea seems to be generally accepted that the unit of work represents one of the best devices yet developed for achieving the broader objectives of the modern elementary school.

Meaning of a Unit of Work

The *Dictionary of Education* defines a unit as "an organization of learning activities, experiences, and types of learning, around a central theme, problem, or purpose, developed cooperatively by a group of pupils under teacher leadership." [28] The essential features implied by this definition are that

[27] E. M. Standing, *Maria Montessori: Her Life and Work* (New York: New American Library of World Literature, Inc., 1957), pp. 198–199.
[28] Carter V. Good, *Dictionary of Education* (New York: McGraw-Hill, Inc., 1945), p. 436.

(1) learning takes place through many types of experiences rather than through a single activity such as reading and reciting; (2) the activities are unified around a central theme, problem, or purpose; (3) the unit provides opportunities for the socialization of pupils by means of cooperative group planning; and (4) the role of the teacher is that of a leader rather than that of a taskmaster.

Types of Units

References can be found in educational publications to resource units, curriculum records, teaching units, learning units, subject-matter units, experience units, commercial units, activity units, core units, functional subject-matter units, and survey units. In general, however, two principal types of units are recognized: subject-matter units and experience units. It is obvious that any unit uses both experience and subject matter. The difference is primarily one of emphasis: In one type, experience receives the primary emphasis, whereas in the other, subject matter is given more emphasis. A learning experience in which the central concern in the acquisition of information, in which the experiences involved are few and formal, is referred to as a subject-matter unit. A learning experience in which the central concern is with the development of desirable traits of behavior, in which numerous and varied learning experiences are involved, in which subject matter functions as a means to an end, is referred to as an experience unit.

Although it is useful to understand the meaning of such terms as subject-matter units and experience units, it should be realized that in actual practice the terminology used is not the most important consideration. The teacher in actual classroom situations is concerned with providing rich and varied experiences for children, with providing opportunities for pupils to participate in planning, executing, and evaluating experiences, and with selecting and organizing experiences in relation to worthwhile purposes that are significant to children.

Problems Involved in Developing Units

Outlines of the principal steps, stages, or problems involved in developing units of work are available from many sources. These outlines should not be followed rigidly in any school; instead, each school should develop an outline of its own which expresses clearly what the teachers are trying to accomplish in that particular school. Certainly, the various steps in unit development should not be considered as separate and distinct. Evaluation, for example, is not something that is undertaken after the other steps have been completed; it is something that goes on continuously throughout the time spent on the unit. The following discussion is intended merely to emphasize the problems teachers must be prepared to meet as they work with children in planning and developing units of work.

ORIENTATION OR APPROACH   Even in traditional schools where teaching has been organized on the basis of the recitation, good teachers have never been satisfied merely to assign lessons without first arousing the interest of pupils and otherwise preparing them for understanding the significance of the lesson. The success of the unit of work depends in large measure upon the ability of the teacher to (1) create an interest in the unit, (2) help the pupils to see the significance of the unit, (3) relate the unit to past experiences of the pupils, (4) utilize the resources of the local community in orienting the children to the problem, and (5) provide a classroom environment that stimulates interest in the unit.

During the orientation period the teacher must be alert to discover the interests, needs, and capacities of individuals; to look for leads to worthwhile activities for individuals and groups; and to develop a feeling of group unity and enthusiasm. Observation of a master teacher during the orientation period of a unit of work leads to the impression that a great deal of time is being wasted in getting the unit under way, unless the observer understands the crucial importance of enlisting the enthusiastic participation of every pupil in the enterprise.

Through skillful planning of class discussions during the orientation period, it is possible for the teacher to help pupils see themselves in relation to the new unit so that a high degree of involvement occurs from the outset. Such was the case in one study of community health problems in which the teacher began with a discussion of health problems students themselves had faced. It was discovered that more than half of the class had had malaria. The students wondered whether they were representative of the total population of the city. They found that local health authorities had no reliable data, and so the students proposed to find answers to their questions by a direct survey. Interest was high by this time, and the work was planned carefully and executed well. The time had been well spent in orienting the pupils to the undertaking.

The sources available from which the approach to the unit may be developed differ from one situation to another. Some common sources are: (1) discussions in the classroom or elsewhere, (2) materials brought from the homes of pupils, (3) exhibits and displays, (4) an important event reported in the papers, (5) the presence of an outstanding visitor, (6) a motion picture being shown locally, (7) a vacation trip taken by the teacher or a pupil, (8) an excursion, (9) a book, magazine, or poem, (10) an educational film, (11) an experience from a previous unit.

TEACHER–PUPIL PLANNING   The pupils, under the guidance of the teacher, should have a large share in planning the activities to be included in the unit. Plans must be made concerning (1) the objectives of the unit, (2) what activities are necessary, (3) what committees will be needed, (4) what responsibilities each committee will have, (5) what activities each pupil

should undertake, and (6) how the unit is to be evaluated. It is through participation in planning that pupils are given opportunities for democratic living in the classroom. As the children suggest objectives, activities, or procedures, the teacher writes them on the chalkboard. It is the teacher's responsibility to suggest others that the children may overlook. After the suggestions have been listed, the children and the teacher evaluate them to discover relationships, eliminate duplications, and organize problems in a sequential order.

THE WORKING PERIOD   The activities that constitute the working period of a modern unit are lifelike, adjusted to the maturity levels of pupils, varied, and socially significant. During the working period the children, under the guidance of the teacher, put into effect the plans previously made. The activities during this period will vary from day to day. There will be periods for working individually at gathering information, reading, or writing for materials and periods when the children work in groups, planning reports or excursions or working on exhibits.

The question is frequently raised by teachers who have not had experience with directing the varied activities involved in a modern unit of work: How can the teacher maintain order with so many different activities going on at the same time? A certain amount of noise is to be expected if a group of children is enthusiastically engaged in various enterprises. This does not imply that rudeness and near-bedlam are to be condoned. Many classrooms can be found in which children work on meaningful activities without an undue amount of noise or confusion. It must be admitted, too, that a teacher with an organized and organizing mind, with knowledge of the psychology of learning, with knowledge of the principles of leadership, possessed of some executive ability is necessary to the orderly management of the working period.

THE CULMINATING ACTIVITY   The culminating activity may take the form of a play, an exhibit of work, an assembly program, or a party. It is important that this activity be carefully planned so that the children will have a feeling of accomplishment and a greater sense of solidarity. Details of the culminating activity are usually planned during the progress of the unit so that this activity serves as a summary of the important achievements of the unit.

EVALUATION ACTIVITIES   Evaluation is an important phase of unit development. It is used for determining the extent to which the objectives of the unit are being realized, for helping each child determine his own progress, and for conferences with parents. The following principles of evaluation apply to unit teaching as well as to other phases of the instructional program.

1. *Evaluation should be comprehensive.* Evidence should be collected concerning all phases of a child's development and not merely his mental development or his mastery of specific knowledge and skills. Evaluation cannot be accomplished through the use of paper-and-pencil tests alone. These must

be supplemented by teacher observation, anecdotal records, samples of the work of the pupil, case studies, sociometric tests, and teachers' ratings for responsibility, initiative, cooperation, work habits, and other habits and attitudes.

2. *Evaluation must be continuous.* In a unit of work, evaluation cannot be accomplished at a specific time. It is a continuous process that goes on during the orientation period, the planning period, the working period, and the culminating activity.

3. *Evaluation must be cooperative.* Opportunities must be provided for each child to check his own progress and to participate in the group evaluation of the work of the unit. Qualities of initiative, self-direction, and responsibility cannot be developed if the pupil must always look to the teacher for the evaluation of his progress.

Advantages of Unit Teaching

The unit of work is not an educational panacea. Although the unit of work may form a large part of the curriculum in the elementary school, it does not constitute the whole curriculum. Children will read many books not specifically related to any unit; there is music that is valuable for its own sake as well as music related to a unit of work; and some aspects of skill will need practice for mastery which does not come from the unit of work. However, a number of values can be derived from units of work if the unit is carefully planned, if the teacher has a considerable amount of skill in managing group work, and if the class schedule is so arranged that a considerable block of time can be allotted to work on a unit. Some of these values are:

1. A unit can provide admirably for individual differences because of the wide variety of activities involved; each child can find an activity in which he can participate successfully and from which he can gain recognition.

2. The unit can be adapted readily to the characteristics, needs, and resources of the community.

3. Materials can be drawn from many subject-matter fields.

4. The unit lends itself to the use of many concrete materials.

5. The unit provides opportunities for the development of initiative, self-direction, and responsibility.

6. The unit provides opportunities for the acquisition of useful information and skills through their use in meaningful situations.

EFFECTIVE USE OF MATERIALS

One task that confronts every teacher, regardless of the subject taught or the level at which the teaching takes place, is that of effective use of resources for learning. Whereas the single textbook was the principal resource for learning in the elementary school of 1900, effective teaching today involves

an understanding of the uses and misuses of textbooks; intelligent use of the central library and classroom collections; effective use of motion pictures and other audio-visual media; use of community resources—people, institutions, processes, and events—as instructional materials; understanding of the contributions of automatic teaching aids and programed learning; and cooperation with other teachers, principals, and supervisors in the preparation of textual materials dealing with the local community.

Long before the child enters school his understanding of the environment begins; as soon as he is born his contact with objects begins to multiply. When he enters school, however, he is frequently expected to begin too soon to deal with abstractions—with symbols in a book that stand for objects. Therefore, many of his school experiences are vague and lacking in reality. Educational reformers have, therefore, been concerned for many years with eliminating the curse of verbalism (use of words without any understanding of their meaning). The emphasis on learning from direct experiences dates back to the sixteenth and seventeenth centuries. Richard Mulcaster (1531–1611), John Amos Comenius (1592–1670), and other sense realists insisted that the proper order of learning must be things–thoughts–words. The same emphasis appeared in a book on teaching written in 1923: "They [teachers] lose sight of the relation that should exist between the exercises of the school and the realities of life, and as a result they teach words rather than the things and meanings for which these words stand." [29] It is not surprising, therefore, to find that current curriculum projects sponsored by foundations and professional groups place a great deal of emphasis on the selection and preparation of instructional materials.[30]

The Textbook

Because the single textbook determined the scope of the curriculum in elementary schools of the past, it does not follow that textbooks have no place in modern elementary classrooms. A good series of textbooks represents the best efforts of competent specialists in elementary education and the services of the editorial staff of the publishers. These books incorporate the findings of the most recent research in the various phases of the elementary school program and certainly have much to offer when they are used wisely. It is not unusual to find at the end of a chapter or unit in a modern textbook some excellent suggestions for projects and activities which pupils can use to make the contents of the chapter more meaningful, some suggested readings, and some suggestions for audio-visual resources and field trips to be used in connection with the chapter or unit. The teachers' manual, which accompanies

[29] William Carl Ruediger, *Vitalizing Teaching* (Boston: Houghton Mifflin Company, 1923), p. 7.

[30] See Association for Supervision and Curriculum Development, *Using Current Curriculum Developments* (Washington, D.C.: The Association, 1963).

a series of textbooks, offers many suggestions concerning the teaching of concepts and skills.

It is not surprising, in an era when every aspect of the elementary school program is being subjected to scrutiny by people in all walks of life, that the textbooks used in the schools should come in for their share of criticism. Some of the criticisms are based on sound philosophical and psychological principles; some are based on inadequate information concerning the purposes and practices of the schools; some come from individuals who are longing for a return to the "good old days"; and some represent a form of special pleading for a specific method or a specific set of materials in the competitive market. At any rate, the teacher, the principal, and the supervisor must understand these criticisms, correct deficiencies when this is possible, and be prepared to explain why certain textbooks are used in their schools. It has been alleged, for example, that one publishing firm and one reading specialist have gained control of the reading field through sheer promotional efforts and that the reading methodology in this series of readers is basically unsound; that reading textbooks used in the primary grades are so easy and so repetitious that they insult the intelligence of many pupils; that textbooks used in modern schools fail to inspire pupils with stories about the great American heroes of the past; and that textbooks present an unrealistic picture of what life is like for many children and adults.[31]

Teachers in most school systems now serve on committees to select the textbooks to be used in the local school system from lists prepared by the state textbook commissions. Whether the teacher is serving on such a committee or selecting the textbooks for his own classroom, he should be familiar with accepted criteria for textbook selection. Such items as the following should be given consideration: *authorship*—recognition in the field, use of appropriate technical vocabulary, use of pertinent research findings, appropriate style of writing; *mechanical features*—size of type, quality of paper, appropriate illustrations, and cost; *contents*—balance in terms of social significance, sufficient detail to make concepts meaningful, application to life situations, organization in terms of principles of learning; *helps for teacher and pupils*—teacher's manual, study helps for pupils, adequate summaries and previews, table of contents, index, glossary, emphasis on problem solving.[32]

The competent teacher helps pupils develop the necessary skills in the use of the textbook. When textbooks are passed out to pupils, the teacher calls attention to the name of the author and to his position, explains the significance of the copyright date, and explains that the preface usually tells

31 See Glenn McCracken, *The Right to Learn* (Chicago: Henry Regnery Company, 1959), Chapter 6; Jenkins Lloyd Jones, "Time to Get New Schoolbooks," *U.S. News and World Report*, March 25, 1963, p. 71; Otto Klineberg, "Children's Readers: Life is Fun in a Smiling, Fair-Skinned World," *Saturday Review*, February 16, 1963.

32 See Marie A. Mehl, and others, *Teaching in Elementary School* (second ed.; New York: The Ronald Press Company, 1958), pp. 211–213.

why the book was written and what purposes it is designed to serve. He explains how information can be located by using the table of contents, maps and charts, the index, the glossary, and the reading lists. The teacher checks systematically throughout the year to make certain that pupils are using textbooks effectively.

Other Reading Materials

Effective teaching requires the use of a wide variety of reading materials in addition to the designated textbook. Providing for individual differences and enriching the learning experiences of all pupils involves locating and using a variety of reading materials. Reference materials such as encyclopedias, dictionaries, atlases, magazines, and newspapers are essential. Books for the central library and for room collections must be carefully selected so that they represent many types of literature including folklore, fiction, autobiography, biography, historical materials, geographical material, and poetry.

Audio-visual Media

The contributions to learning that can be made by the use of audio-visual media such as sound and motion pictures, still pictures, records and recordings, and radio and television is now well documented. These media can be used to sustain attention, to provide concreteness, to increase the meaningfulness of abstract concepts, to bring into the classroom places and events remote in time and space, and to stimulate interest. They may also help the teacher with the problem of working with several groups at the same time. For example, the teacher may use the tape recorder and earphones hooked up to pupils' desks to simultaneously present lessons to several groups—slow, fast, and average learners—in the classroom.

The effectiveness of any medium of instruction depends upon the skill of those who use it. The availability of textbooks, other reading material, films, radio and television is only one factor; unless the medium is selected in terms of the objectives of the course or unit and unless there is adequate planning for its use, the maximum potential of the medium may not be realized. It has been reported, for example, that introducing a film, showing it, providing for discussion, and showing it a second time increased the ability of pupils to answer test questions 78 percent over just showing the film without introduction or discussion.[33]

Teaching Machines and Programmed Learning

It has been said that education is the last of the great human enterprises to be influenced by technology. Certainly, agriculture, industry, business, the military, and housework have been transformed by recent technological ad-

[33] See Arthur H. Shuster and Milton E. Ploghoft, *The Emerging Elementary Curriculum* (Columbus, Ohio: Charles E. Merrill Books, Inc., 1963), pp. 137–147.

vancements. Rapidly increasing school populations, the pressure of new knowledge on an overloaded curriculum, and demands that the quality of instruction in the schools be improved have caused school personnel to be particularly receptive to any help that might come from modern electronic devices or from programmed learning.

Although the teaching machine, as a device, is the product of recent technological developments, it has revived an educational issue that is almost as old as civilization itself: the relative importance of teachers and instructional materials. Plato believed that the student could acquire an education only by studying with a wise man; Socrates, on the other hand, urged an approach that placed less emphasis on the teacher and more emphasis on the independent efforts of the student. When textbooks were first introduced some teachers viewed them with alarm. "Can textbooks replace teachers?" President Garfield has been credited with the statement: "Give me a log hut, with only a simple bench, Mark Hopkins on one end and I on the other, and you may have all the buildings, apparatus and libraries without him." Thomas Carlyle, however, said, "The true university of these days is a collection of books." No one has claimed that the teacher is dispensable. Technology, be it ever so modern, will not relieve the teacher of hard work. It will, if used wisely, help the teacher to get more work done.

Programmed learning, whether it is used in connection with teaching machines, programmed textbooks, or other automated procedures, has certain advantages: it enables the pupil to proceed at his own rate; it requires the pupil to be active if the lesson is to move; it gives the pupil immediate knowledge of his progress; it requires the teacher to be more precise about objectives; it provides for continuity from easier to more difficult concepts; and it requires the pupil to master one step before he goes on to the next one. The effective use of teaching machines, programmed learning, educational television, and other innovations requires the reconstruction of the school organization, not merely the reconstruction of the role of the teacher. To expect one person to perform all the functions required in the modern school is unrealistic. The problem, therefore, becomes one for cooperative planning by teachers and administrators to bring about a reorganization of the responsibilities of classroom teachers and other school personnel in the interests of greater efficiency and effectiveness.

Community Resources

The local community is increasingly used as a source of learning. Events, problems, processes, and people in the community provide a reservoir of instructional materials. Local history and geography; museums, press, libraries, churches, hospitals, and schools; occupations of the people; and local government are some of the community resources that can be used. Many school systems provide a guide to the use of community resources, which lists the

location of the place to be visited, the person to be contacted, the number of pupils that can be accommodated, the curriculum area that can be served by the visit, and directions concerning the planning that should be made for the trip.

The human resources of the community can also be used to enrich the instructional program. In every community there are adults with rich and varied backgrounds who can be invited into the classroom to help make learning more vital and realistic. A citizen who has skill in art, one who has a collection of great paintings, a veterinarian, an electrician, a mayor, or a person who has lived in another country may not only make a direct contribution to the problem on which pupils are working, but may develop a greater interest in the school by taking part in its program. The teacher cannot be a specialist in every area; his skill lies in directing the learning of pupils and in bringing them into contact with the educative resources of the community. Many teachers send a questionnaire to parents requesting information about the contributions they could make to the learning of pupils in certain areas.[34]

SUMMARY

1. Curriculum improvement, in the final analysis, means the improvement of teaching; it is in the individual classroom that the actual improvement of the curriculum takes place.

2. Guiding principles for the improvement of teaching are found in the newer psychology of learning, the democratic ideal, and the broader objectives of education.

3. A valid theory of instruction supplies guiding principles to give consistency to practice, enables the teacher to present a structure of knowledge that is appropriate for the child; and maximizes intelligent behavior on the part of the teacher.

4. The application of techniques of role analysis to the area of instruction promises to bring about a more realistic situation in regard to roles teachers are expected to play.

5. Recent efforts to evaluate teacher effectiveness are more directly related to the functions teachers are expected to perform in actual classroom situations than were earlier efforts in this field.

6. Effective organization of the class for living and learning involves intelligent use of the principles of group dynamics.

7. The classroom environment—including the physical, intellectual, emotional, and social aspects—determines to a great extent the quality of living and learning experienced by pupils.

[34] See Committee on Human Resources of the Metropolitan School Study, *Fifty Teachers to a Classroom* (New York: The Macmillan Company, 1959).

8. There is a type of discipline that is appropriate for a democracy as well as a type that is appropriate for a dictatorship. It is important that teachers understand and use the type of discipline that is appropriate for free men and women.

9. The unit of work is not an educational panacea; it is one of the best devices yet developed for achieving some of the broader objectives of the elementary school.

10. The effective use of instructional materials is a significant prerequisite to effective teaching.

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Gage, N. L. (Ed.), *Handbook of Research on Teaching.* Skokie, Ill.: Rand McNally & Company, 1963. Chapter 10 presents an analysis of teaching methods.

Gross, Neal, Ward S. Mason, and Alexander McEachern, *Explorations in Role Analysis: Studies of the School Superintendency.* New York: John Wiley & Sons, Inc., 1958. The first four chapters deal with basic problems involved in role analysis.

Hanna, Lavone A., Gladys L. Potter, and Neva Hagaman, *Unit Teaching in the Elementary School.* Rev. ed.; New York: Holt, Rinehart and Winston, Inc., 1963. A comprehensive treatment of unit teaching.

Rose, Gale W., "Performance Evaluation and Growth in Teaching," *Phi Delta Kappan*, October 1963, pp. 48–53. An excellent summary of recent work in the area of evaluating teacher effectiveness.

Sarason, Seymour B., and others, *The Preparation of Teachers.* New York: John Wiley & Sons, Inc., 1962. Raises this question: What is the relevance of the contents and procedures of teacher training for the functions that a teacher performs in his day-by-day work?

Shuster, Albert H., and Milton E. Ploghoft, *The Emerging Elementary Curriculum.* Columbus, Ohio: Charles E. Merrill Books, Inc., 1963. Chapter 5 contains an excellent treatment of materials used in teaching.

Trow, William C., *Teacher and Technology: New Designs for Learning.* New York: Appleton-Century-Crofts, 1963. An excellent treatment of the role of technology in the educational enterprise.

SELECTED FILMS

Broader Concept of Method. (McGraw-Hill, Inc.)
Part I. A thirteen-minute sound film presenting a frank picture of the teacher-dominated, lesson-hearing type of recitation and the typical effects of this method on pupil attitudes, responses, and learning.
Part II. A nineteen-minute sound film showing students learning to work together, to organize themselves into functional groups, to make and carry out plans, and to present a report of findings.

Design for Learning. A nineteen-minute sound film that shows the building af a modern school and explains new departures in school architecture. (Indiana University)

Discussion in Democracy. An eleven-minute sound film showing how a group of pupils learn the relationship of organized discussion to a democratic society. Shows the role of leaders and participants in preparation and planning. (Coronet Films)

Experimental Studies in the Social Climates of Groups. A thirty-two-minute sound film showing the effects of autocratic, laissez-faire, and democratic social climates on the attitudes and learning of junior high-school pupils. (Iowa State University)

Fundamental Skills in a Unit of Work. A twenty-minute sound film showing how a skillful teacher can arouse the interest of the class and guide them in developing and carrying out a unit of work. (Bailey Films)

Learning through Cooperative Planning. An eighteen-minute sound film that illustrates seven basic skills involved in cooperative planning: identifying the problem, collecting information, weighing ideas, making decisions, carrying out plans, keeping records, and evaluating results. (Teachers College, Columbia University)

Maintaining Classroom Discipline. A fifteen-minute sound film showing how discipline depends upon the approach used by the teacher. (McGraw-Hill, Inc.)

Photo Comment

EDUCATION BEYOND THE CLASSROOM

One of the facts that is coming to light about children who live in segregated or low-income housing and attend segregated schools is that their geographical boundaries have been extremely limited. Too often they have never seen the library, park, zoo, farms, bridge, museum, market, laboratory, factory, airport, and railroad stations that are familiar to the middle-class child. In fact, some writers speak of such experiences as the "out-of-school curriculum" available to most children by family excursions. Through the out-of-school curriculum the child acquires vocabulary and concepts that prepare for school learning. Reading a story about animals in the zoo or on the farm is easier after one knows what a cow or a giraffe looks like. Some children in primary grades have not even seen a picture of either animal.

For those children whose experience background has been limited, extending the curriculum beyond the classroom is imperative. Excursions, however, require extra hands. If the experience is to yield maximum results in language and concept development, it is important that there be many adults on the trip, not only to protect the children's safety but also to talk with them on a one-to-one basis, adult to child, about what they are seeing. Mothers have long been pressed into service for such excursions; today volunteers are being used in many schools to serve this and other useful purposes.

Excursions can serve useful purposes only if they grow out of the classroom program and are carefully planned for by teacher and pupils. Hastily organized trips, or trips with so vaguely defined a purpose as "going to see a farm," have no place in the curriculum.

A discussion of what to look for and what questions to ask makes the trip more purposeful. Such a discussion helps pupils to anticipate the trip in their minds and makes the trip theirs, rather than the teacher's.

When they return from the trip, teacher and pupils will have a follow-up session, in which they discuss the trip and share impressions and information. Perhaps a part of the trip may be reproduced in art or in story form. The teacher will beware, however, of *always* having his pupils draw a picture of what they have seen or *always* having pupils write a report about what they have learned. Can you see why?

Photo by Helen Nestor
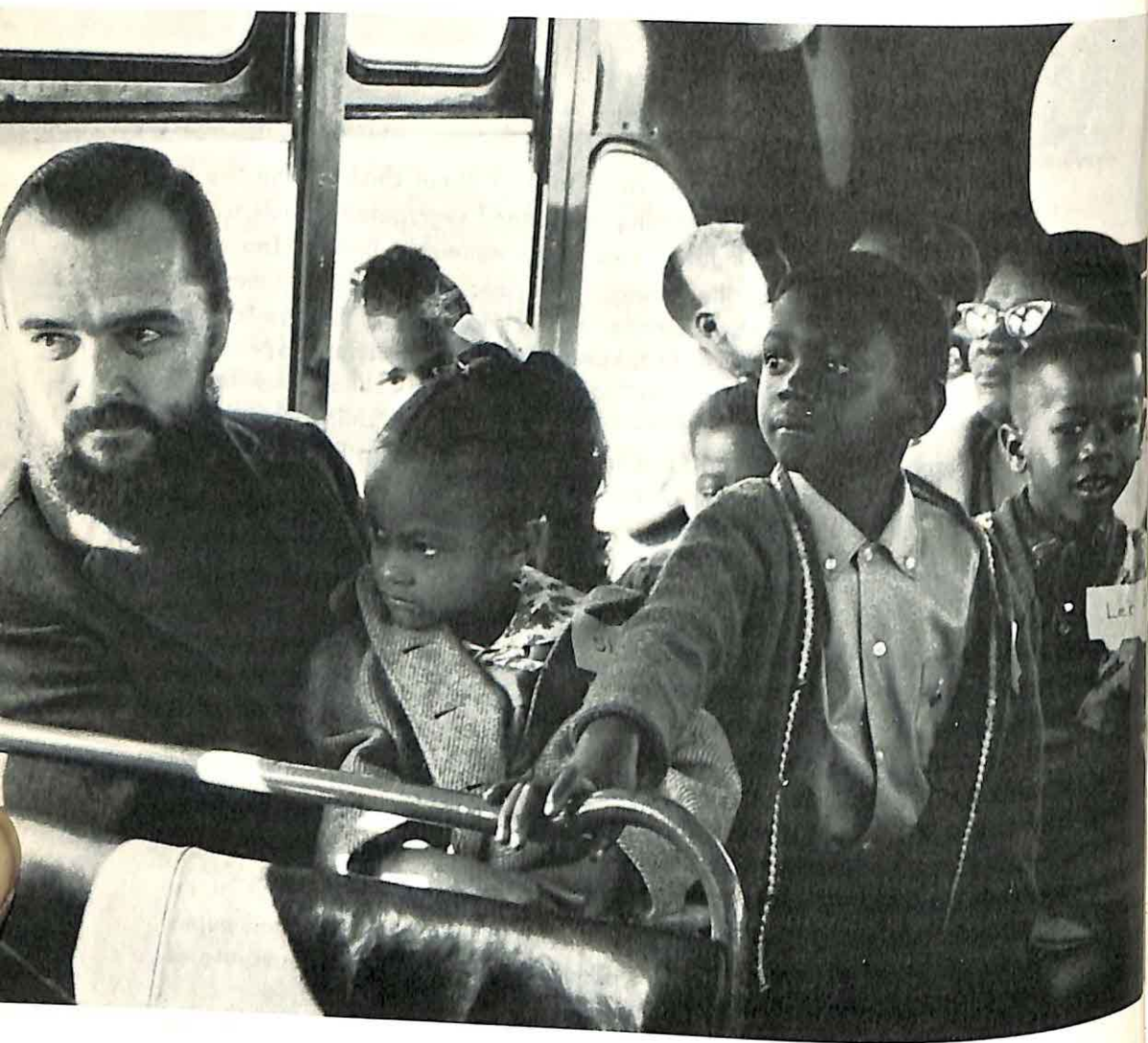
Photo Comment

THE BULLETIN BOARD AS A TEACHING TOOL

A well-arranged bulletin board, displaying pictures relating to what the children are studying, can be an invaluable teaching tool. Objects can be selected around a concept taught in class. Arrangement of objects on the board can add to the teaching effectiveness of the board, as well as to attractiveness of the classroom. The sketches on these pages, contributed by Kenneth Lansing, depict possible arrangements. Professor Lansing makes the following suggestions with respect to arrangements:

1. Arrange the objects asymmetrically, rather than with opposite sides arranged so as to achieve regularity one with the other. The arrangement should balance, but it will be more interesting if it is not symmetrical. Do not measure for accurate arrangement; use eye judgment. Any irregularities will improve rather than spoil the display.
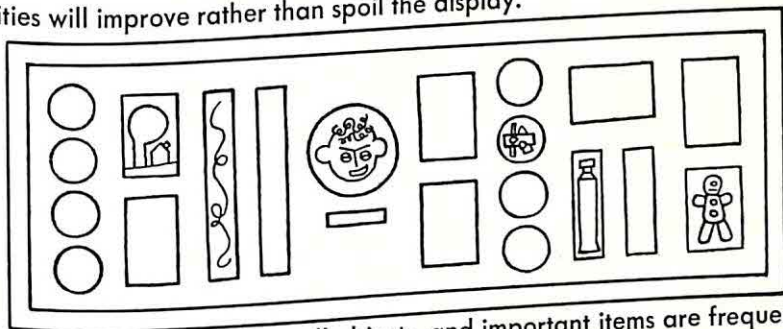
2. Printed materials, small objects, and important items are frequently shown with greater effect if they are placed upon a background that causes them to stand out. Irregular shapes sometimes make nice background because they attract attention. A background can be made from many materials. You can use aluminum foil, corrugated cardboard, string, yarn, bottle caps, cloth, dark sheets, burlap, and many other things. Yarn, paper strips, string, and bottle caps can be put together so that they form a shape.

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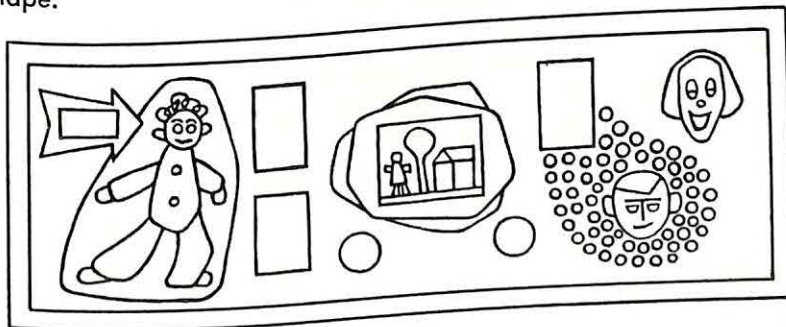
3. The display should be tied together and appear as a total unit rather than as a series of completely separate parts. If one color, texture, or shape is repeated throughout the display, it will help to unify the arrangement.
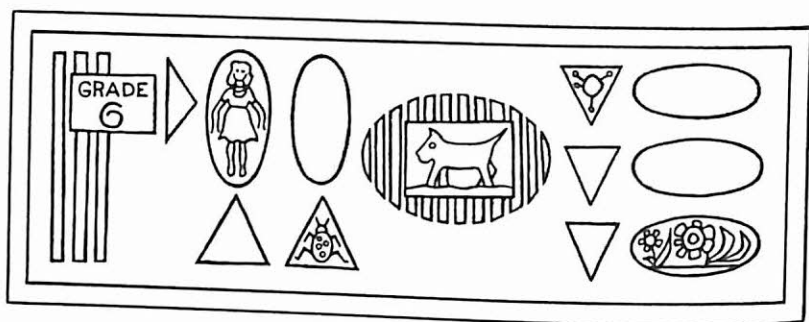
4. String or yarn can also help to tie an exhibit together.
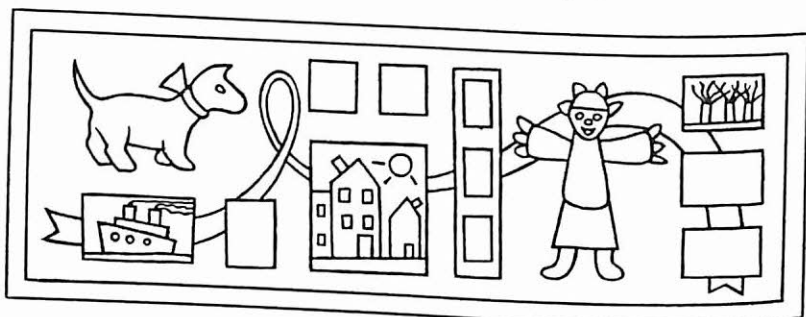
5. Sometimes it is interesting to place more emphasis upon one part of a display than upon the other parts. This can be done with bright colors, contrast, unusual shapes, etc.

6. Lines, colors, and shapes should lead your eye into the arrangement and not out of it.

7. When mounting pictures, the bottom margins are usually the widest. For a square picture, the top and side margins should be equal; for a vertical rectangle, the top margin should be wider than the side margin; and for horizontal rectangles, the side margins should be wider than the top.

8. Formal, symmetrical balance can also be used, but there should be some variety of sizes and shapes.

9. Labeling is important. Here are some suggestions:
    a. Prepare simple, block letters of tagboard for patterns.
    b. Use a paint brush, a lettering pen, or a felt pen.
    c. Use interesting papers, cloth, or string, for letters.
    d. Give texture to letters by covering with burlap or sandpaper.

Problems and Projects

1. Modern education emphasizes the individualizing of instruction. Recognizing that pupils differ in their capacity and rate of learning, today's teacher has broken away from teaching the whole class the same thing at the same time and instead divides his class into smaller groups so that he can vary his instruction. But as he works with one of these smaller units, what is he to do with the rest of the class? It is easy enough to keep children busy, but not so easy to keep them busy at tasks that have educational value. Formerly teachers solved the problem with "seat work." Children filled in hectographed outlines, wrote their spelling words ten times each, or practiced pushes and pulls in Palmer-method penmanship while their teacher held a reading class in the front of the room. Such activities had little, if any, educational value.

Today, many schools are working out more satisfactory solutions to the problem of providing for individual or small group instruction. Programmed instruction in which basic content is presented in a series of guided steps and feedback provided at each step through autoinstruction is one solution. The pupil carries out a step in the program and then is directed to a page to find out if he is right. If he is wrong, he is told what he must practice before going on. Thus the pupil receives immediate reinforcement of the right or wrong answer, without having to wait for the teacher to grade his work; in this way, the pupil is prevented from practicing and learning the wrong responses.

If your school has a curriculum laboratory, look for samples of programmed learning. You are most likely to find them in such subjects as reading and arithmetic. (See, for example, the Science Research Associates Reading Program.) Put yourself through the first unit of instruction. Then list advantages and disadvantages of using such instructional aids. Does the program eliminate the necessity of instruction by the teacher?

2. Can creativity be programmed? Look up the researches of R. Crutchfield and M. Covington for descriptions of successful attempts to foster creativity through programmed learning.

3. In addition to programmed instruction, there is an increasing number of teaching aids that incorporate the feedback principle and that can be used by pupils without direct teacher supervision. However, in selecting such aids, the teacher must make sure, not only that the material has built-in reinforcement, but also that the concept it is designed to teach is educationally significant. A cut-out puzzle of geometric shapes that will fit only a matching space is an example of such a teaching aid for young children. A map of the United States showing important cities and wired so that a buzzer sounds when a

child makes the correct connection with a state capital is an example of a device to teach insignificant facts.

In catalogues put out by producers of educational equipment, look for examples of materials that provide for self-correction. Bring to class descriptions of materials that meet one or both of the criteria discussed above. Explain how the material provides for reinforcement and defend or criticize the educational significance of the concept it teaches.

4. Bruner argues that concepts are acquired in three stages: a sensory-motor where the learner builds the concept in his muscular system; an iconic where he has a mental picture of the concept; and a symbolic stage where he can deal with the concept in words. For example, in learning one-to-one correspondence in mathematics, the child must first carry out the physical act of matching one object or act with another. Gradually he can build a mental image of the action; the teacher may aid this second stage by drawing on the chalkboard a picture of two rows of objects with arrows to denote correspondence between each pair. Finally, the child can state of two quantities, "They're both the same, because every time you put one down here, I put one down here."

Following are some concepts included in the elementary curriculum. State for each concept how a teacher may help a child progress through the three stages. What kinds of experiences might be provided?

    a. Subtraction is the reverse of addition (grade one).
    b. When forces are in balance, an object does not move.
    c. Ocean currents and prevailing winds influenced early voyages of
       discovery and exploration.

5. In one team-teaching program, 200 fifth-grade children assemble for a science lesson. The science teacher presents a lecture on the movement of Mars around the sun. By means of slides and diagrams, she attempts to make clear the principle of retrograde motion to explain the fact that Mars appears at times to move backward relative to the motion of the Earth. Following the lecture, the children meet in smaller groups with a member of the teaching team for questions and discussion.

In what way does such a procedure violate the learning sequence described by Bruner? Review your own knowledge of retrograde motion and plan the teaching steps necessary to ensure acquisition of the concept, according to Bruner's analysis.

6. Suppose that all members of the teaching team agreed that sensory-motor experiences should precede the iconic and symbolic. Does team teaching contain a built-in device that would make it difficult for an individual teacher to allow enough time for the sensory-motor and iconic stages? Suppose one section of the fifth-grade class needed considerable work on the first two stages, while the other sections were ready for the next lecture. Suggest ways in which the problem might be handled.

Leadership
for Curriculum Improvement

As the curriculum leader moves from school to
school and from group to group within the school
system's organization, different situational ingredients
operate. According to the situational theory, no
single status leader can hope to perform with extreme
initiative in all the groups with which he meets, and
still perform effectively in many of them. In this
sense, the significance of emergent leadership and
release of leadership potential in others is forced
upon him.
—Ronald C. Doll, *Curriculum Improvement:
Decision-Making and Process* (Boston: Allyn and
Bacon, Inc., 1964), p. 162.

The last chapter focused attention on the human-relations problem
faced by the teacher who works from day to day with a group of pupils. This
chapter is concerned with the same problem in the setting that confronts the
instructional leader who works with teachers and other school personnel in
an effort to improve teaching-learning situations. The principles necessary
to success are the same in both situations. Both enterprises involve mutual
understanding, shared purposes, respect for that which is unique in each
human being, and a search for effective ways of working together.

Curriculum improvement, like effective teaching, depends upon the use
of procedures that enable each individual to operate at his highest level of
competence and creativity; it is a matter of releasing potentials. Principles
and procedures of group action are not the concern of administrators and
supervisors alone; classroom teachers also need to be familiar with techniques
used in group study, planning, decision, and action.

THE MEANING OF LEADERSHIP

During the last two decades, a great deal of attention has been given to the study of leadership as it operates in school situations. It is generally accepted that competent leadership facilitates the process of curriculum improvement; that effective leadership somehow creates situations that enable the group to get things done, which would not have been done in the absence of such leadership. Recent studies have, therefore, been concerned with the meaning of leadership, what the effective leader does, and how he does it.[1]

Mackenzie and Corey have provided a useful conception of leadership as follows:

"Recognized leadership" is a name for those activities that are seen by individuals or groups as helping or potentially helping to provide the means they desire to use to identify or attain their goals.[2]

Under the general heading, "The Task Orientation of Curriculum Leaders," Doll has presented a detailed analysis of the tasks that are generally performed by instructional leaders. They include helping the people of the school community define educational goals, developing greater effectiveness in teaching, building a productive organizational unit, creating a climate for growth, and searching for resources that make teaching live and practical.[3] Mackenzie and Corey have described four ways of exercising leadership: force, bargaining, paternalism, and the identification of mutually acceptable goals and means.[4]

Many recent studies attempt to identify distinct theories of leadership. One theory emphasizes the personal qualities of the leader; another emphasizes the structure of the group in which leadership is exercised; and a third theory holds that the situation or circumstances in which leadership operates is the vital factor. Some writers use the pendulum analogy to explain what has been happening in research on leadership: from overemphasis on the traits theory to the opposite pole of overemphasis on the situational theory and back to greater recognition of the validity of the traits theory. Certainly, the traits theory occupied the center of attention for many years; over 100 studies of traits that leaders should possess have been reported. Later efforts emphasized the idea that the leader could not be analyzed apart from the

[1] See Association for Supervision and Curriculum Development, *Leadership for Improving Instruction*, 1960 Yearbook (Washington, D.C.: The Association, 1960); Gordon N. Mackenzie and Stephen M. Corey, *Instructional Leadership* (New York: Bureau of Publications, Teachers College, Columbia University, 1954); and Ronald C. Doll, *Curriculum Improvement: Decision-Making and Process* (Boston: Allyn and Bacon, Inc., 1964), Chapter 7.

[2] Mackenzie and Corey, p. 10.

[3] Doll, pp. 163–166.

[4] Mackenzie and Corey, Chapter 2.

group; that leadership responsibility could not be permanently attached to an individual; and that actual leadership was frequently provided by a member of the group who had no official status as a designated leader. Increasing recognition that an individual may function well in one situation and poorly in another has tended to destroy the image of the monolithic leader and to lend support to the situational theory.

However, the pendulum analogy is an oversimplification. Actual practice does not exemplify any of these theories as such. Nor is it merely a combination of the three theories; it involves other factors such as the value system of the society in which the school operates. The following analysis of principles governing effective leadership is an effort to recognize many of the factors involved.

INSTRUCTIONAL LEADERSHIP

Wherever human beings work in groups there is a need for leadership. The wise use of human talents requires effective leadership in education as well as in other fields of human thought and action. Human history is filled with illustrations of the degree to which the welfare and success of people have depended upon the intelligence and skill of their leaders.

As problems of living have become more complex, and as individuals have found it increasingly difficult to meet their needs singlehanded, the problem of group leadership has assumed greater significance. The selection of King Saul on the basis of his excessive height and his attractive personal appearance did not work out very well even in ancient Israel. In more modern times the choice of leaders on equally irrational standards has been disastrous.

The challenge of the second half of the twentieth century to the elementary school cannot be met without a greater expenditure of creative effort on the part of elementary school personnel than has ever been exerted before. Increasing enrollments, a continuing shortage of qualified teachers, and increasing demands upon the school by a culture in transition call for leadership that is capable of making the best use of the teaching talent available. The situation demands the maximum use of the resources of universities, teachers colleges, schools of education, state departments of education, and professional organizations to recruit and educate capable young men and women for positions of educational leadership.

Instructional leadership is exercised, in a society of free men, by those who bear titles indicating their position of "status leadership" and by those who lead merely because of their knowledge and ability. The university president, the state superintendent of public instruction, the local school superintendent, the member of the board of education, the member of the parent-teacher association, the school principal, the supervisor of instruction, and the classroom teacher are all educational leaders.

When leadership is exercised by anyone in a manner suited to a democratic society, it follows certain principles. The principles that mold an individual's thoughts and guide his actions when entrusted with instructional leadership are discussed in the following paragraphs.

Basis of Instructional Leadership

In a profession that emphasizes the application of intelligence to the solution of problems of living, leadership is entrusted to the man who knows. The magnetic personality, the common touch, and the imposing physical stature no longer suffice. The leader needs a thorough grasp of the entire school program in its social setting—historical background, objectives, the relationship among parts, methods and procedures. In addition, the leader needs to be well grounded in the techniques of evaluating the effectiveness of the school program. He cannot rely entirely on his preservice education for these abilities; he must serve as a student and as a practitioner long enough to gain the intimate understanding of teaching that comes only through an integration of theory and practice.

There is a special burden placed upon the supervising principal in an elementary school to acquaint himself with educational methods at all grade levels and in all curriculum areas. It is rather common practice for school boards to appoint as supervising principal the upper-grade teacher, the physical-education specialist, or some other teacher whose background has been limited but who has taken courses in administration to learn the duties of the elementary principal. This kind of preparation is not enough. To be truly a leader, the principal must know methods of teaching primary reading; he must know recent developments in the teaching of foreign languages in the elementary school; he must be prepared to assist in the development of a program for science teaching in the elementary grades; he must know the field of child growth and development. Through a program of formal course work, of reading, of attendance at professional conferences, of classroom visitation, the principal whose training has been, in the past, inadequate must make up for its inadequacy. And even the best-prepared educational leader must continue to be a student of education if he is to furnish intelligent leadership for teachers.

Personal Integrity

Since we teach better by example than by precept, what the leader does is more important than what he knows or what he says. Instructional leadership is based on a high degree of personal integrity. The term "personal integrity," as used here, means that the leader really stands for certain principles and can be depended upon to see that these principles are observed in staff relationships. If he believes in the principle of group planning, he should in practice try to carry out the policies agreed upon by the staff. Unless the

leader has this kind of personal integrity, group processes become a form of busywork, and the morale of the staff steadily declines.

The subject of national morality has been given a great deal of attention in recent years. National morality is nothing more than the sum of the characters of the individuals composing the nation. The public schools have a part in building character. It is not surprising, therefore, that the personal lives of educational leaders should be the subject of the closest examination and that personal integrity should be regarded as an essential qualification for leadership.

The Inconspicuous Role of the Instructional Leader

The effective instructional leader is the one who inspires confidence in the members of his staff to do things themselves. Instead of keeping himself in the limelight, he is constantly calling attention to the accomplishments of the group and thus building staff morale.

In the film *Broader Concept of Method*, listed at the close of Chapter 7, a student who was acting as the leader for one of the committees failed to understand the true role of the leader in group planning. He assumed, as many individuals in positions of leadership do, that his function was to tell the members of the group what he wanted them to do. He soon ran into difficulties because several of the committee failed to see the wisdom of his plans, had other plans of their own, and wanted to participate in formulating the plans for the group. The incident has implications for the work of the educational leader in dealing with staff members. The official leader of a faculty group who is bent on his own personal advancement, who seizes every opportunity to promote his own pet projects, who presides at every meeting of the staff and proceeds to lay out his program for the school, has failed to comprehend the role of leadership in a democratic society. It is the function of leadership to help the members of the group formulate common goals, develop ways of achieving goals, and grow in their capacity to evolve worthwhile procedures.

Promoting an Atmosphere of Informality

Intelligence and informality are by no means mutually exclusive. Just as the common touch is no substitute for intelligence, neither is intelligence a substitute for friendliness and informality in dealing with other members of the staff. By showing an interest in the hobbies, interests, and skills of each staff member, by inviting the staff to his home for social meetings, and by encouraging the use of first names instead of formal titles, the leader can help to create an atmosphere of friendliness that contributes to smoother human relations in the school provided such informality comes from a genuine interest in people. Informality that is a pose is easily recognized as such and frequently resented.

Building Morale

Morale building has been given a great deal of attention in industry and in military circles. Educational leadership, in general, has been slow in recognizing this important factor in the effectiveness of the school staff. Educational leadership has no greater responsibility than that of developing in the members of the staff an *esprit de corps*, a sense of participation in the total life of the school, a feeling that all are engaged in a work whose contributions to mankind are unquestioned, and that each brings his own unique talents to the accomplishment of a common goal. By giving attention to the health needs of teachers, by reducing the teaching load, by helping to improve the social status of teachers in the community, by recognizing outstanding accomplishments, by giving each teacher a feeling of being wanted and appreciated by the school system, by working for good salaries and working conditions for the staff, by keeping the staff informed concerning actions taken in their behalf, by providing attractive classrooms and teachers' lounges, by promoting from within the ranks when possible, by consulting teachers before taking action which will affect them, and by showing a willingness to work with a teacher in solving a problem created by the teacher's own mistake, by these and by countless other methods the leader can help to build better staff morale.

Foresight of the Instructional Leader

The teacher who has no vision of the results of his work in the form of richer and more successful lives for the children he teaches is enmeshed in a sorry round of details. Similarly, the instructional leader who does not visualize the school as an agency for helping each child achieve to the full stature of his capabilities is unfit for his position. The genuine leader must work and strive for educational opportunities that far surpass those provided for children at the present time; he must have a vivid concept of what constitutes adequate educational opportunities; he must rest his faith on a long-range program rather than on immediate ends; he must not let the drudgery of current details obscure his vision for a better tomorrow for the children in elementary schools.

The Courage to Face Difficult Tasks

There can be no easy route to success for an individual who aspires to instructional leadership in these times. He must continuously study educational theory and practice; he must keep abreast of the ever-changing social structure in which the school exists; he must utilize opportunities for study and travel; and he must welcome tasks that are difficult. Growth comes through striving, not necessarily through attaining. Great leaders are not de-

veloped by the performance of easy tasks. Competence as an instructional leader comes only with courage to face difficult tasks.

How the Methods of Democracy Help

Respect for the individual is the essence of democracy. Without respect for the individual, no instructional leader can measure up to his responsibilities. The leader reflects this respect for personality in his dealings with pupils, teachers, parents, and other citizens. Intelligence, personal integrity, modesty, the common touch, the ability to build morale, vision, and courage are all included in the principle of respect for personality or human worth. Without faith in the ability of individuals to work out their own problems if given the opportunity to work on them cooperatively, all other qualifications for instructional leadership are to no avail.

THE MODERN CONCEPT OF SUPERVISION

As classroom teaching has moved away from practices based on the mechanistic view of learning toward procedures more in harmony with organismic psychology, the concept of the role of supervision has changed accordingly. Supervision is no longer regarded as dictation and inspection; it is now regarded as guidance and coordination. Supervisors are regarded as resource persons subject to call whenever and wherever their services are needed.

The modern approach to curriculum improvement broadens the functions of the supervisor. Supervision is no longer limited to the improvement of instruction; it is concerned with the improvement of all the factors in the home, school, and community that influence the growth and development of children. Furthermore, supervision is no longer considered the responsibility of one person or a few persons; it is a cooperative undertaking involving the entire school staff as well as parents and other laymen. The modern supervisor is qualified by training and experience to render expert technical service in coordinating and guiding the efforts of many persons toward the improvement of buildings and equipment, materials of instruction, and methods of teaching. The principal and the supervisor are no longer unapproachable superiors but are working on a level with teachers to promote the wholesome development of children. As the need for children to learn democracy by living it in the classroom is recognized, the need for democratic leadership in organizing the school staff for cooperative action becomes a natural consequence.

The work of the state departments of education in relation to the instructional program has shifted from the publication of mandatory courses of study and inspection to providing leadership for cooperative programs for the improvement of instruction. Leadership is also being provided on the

regional level through such instruments as the Southern Association's Cooperative Study in Elementary Education.

ORGANIZING FOR COOPERATIVE ACTION

An important responsibility of the official leader in any school is that of helping the staff develop and improve the organization for cooperative action. It should be understood, of course, that organizing for curriculum improvement is a continuous process rather than a single act of setting up a finished structure. Since curriculum improvement involves changes in the behavior of individuals, any plan of organization must take into account the experience and ability of the personnel involved and the problems existing in the community the school serves.

Our system of public education places a great deal of responsibility for planning in the hands of the local administrative unit. The principal of an elementary school can, of course, develop his own organization without consulting any members of the staff. This type of organization, however, may actually hinder the accomplishment of the real objectives accepted by members of the staff and consume valuable time that might otherwise be used for constructive purposes. The principle of the consent of the governed is deeply embedded in our culture. The democratic process, although slower and more difficult to manage, seems to produce better results in the long run.

The skills required for working cooperatively with a group of teachers are as technical and difficult to learn as those required in any other profession. Teachers who have been accustomed to authoritarian administrative practices over a long period of years find it difficult to unlearn habits of conformity and irresponsibility and to acquire the abilities demanded in cooperative work. Only gradually can they be led to examine and help improve the machinery for cooperative action, for resolving differences of opinion, and for distinguishing between the executive function, which belongs to the administration, and the policy-making function, which belongs to the staff. Teachers, no less than children, learn by doing, and it is the responsibility of those who are in positions of leadership to assist in providing the machinery for participation in group enterprises.

The progress that is being made in defining more clearly the purposes of the elementary school and in developing an organization that coordinates the efforts of teachers in the accomplishment of these purposes has been given a great deal of attention in educational publications. Detailed descriptions of county, city, and state programs in current use are available.[5] It is sufficient, therefore, to present at this point some basic principles that should be

[5] Harold J. McNally and A. Harry Passow, *Improving the Quality of Public School Programs* (New York: Bureau of Publications, Teachers College, Columbia University, 1960).

followed in setting up an organization for curriculum improvement in an elementary school.

1. *The organization should serve to release the potential abilities of individuals.* In almost any school there are some teachers with much experience, others with little; some with one type of preparation, some with another. All have talents they can share, all have limitations, and all need to grow. The organization in which they work may stimulate growth, encourage initiative, and release potential abilities. On the other hand, it may stifle growth, discourage initiative, and reduce individual effort to a mere routine of conforming to imposed patterns. The leader who has a broad understanding of human relationships and skill in working with people can encourage each teacher to make his own contribution and still work as a member of the team.

2. *The organization should be flexible enough to permit groups of teachers to work on problems of real concern to themselves.* Organization is a means of achieving real purposes, and when it gets in the way of teachers who have important work to do it should be examined critically. For example, teachers of young children may want to come together to discuss the characteristics of children at that stage of development, instructional materials that have proved to be useful, and ways of working with parents. Teachers of older children may want to work on an entirely different set of problems. The organization should serve the real needs of individuals rather than stand in the way of getting work done.

3. *The success of any type of organization depends upon the climate in which it exists.* A democracy, no less than a dictatorship, requires organization. The organization in a dictatorship exists in a climate of fear and distrust, of arbitrary authority and enforced conformity. In a democracy the organization must exist in a climate of mutual respect and confidence, of authority derived from the consent of the group, and of willingness to work for the success of plans agreed upon by the group.

The administrator is properly concerned with developing an organization that reflects the general policies of the school system; it is important also that he respect the views of the members of his own staff. The success of the organization depends to a large degree upon staff morale. Morale is the factor that enables individuals to live up to their highest possibilities. When the morale of the group is low, each member contributes only a small fraction of what he has to give; when morale is high, members of the group work together in good will and with enthusiasm.

Effective staff relationships are impossible unless the leader demonstrates that group morale is one of his major concerns. Morale grows slowly in an atmosphere of mutual respect and confidence. It can be severely stunted by one false action that shows that the leader has no respect for decisions reached by the group. This situation cannot be remedied merely by developing a new

type of organization on paper. It can be remedied only by the slow process of rebuilding staff morale.

Effective staff relationships are also made more difficult when the leader fails to take into account the fact that many teachers identify with their groups. That is, the teacher comes to feel that the successes and failures of the group are really *his* successes and failures. When a group does well in a school assembly and is commended by the principal, it is just as if the teacher himself had been on the stage; his feelings about self are bolstered. But when the group or an individual in the group is criticized by the principal or supervisor, the teacher feels that the criticism reflects upon him. Adverse criticism of an individual child or a group to the teacher in charge, and particularly before his peers, can be destructive of a wholesome psychological climate. If it is customary for principal or supervisor to do this, group morale will suffer.

The Individual School as the Center for Curriculum Study and Improvement

The individual school is the functional unit for curriculum planning. This is true because curriculum planning must always be done in terms of a specific group of children. There can be no such thing as *the* best arithmetic program; there can only be a program that is best for a given group of children living in a given environment. The experiences children have in elementary schools improve only as the teachers in their own school gain a better understanding of child growth and development, define more clearly the objectives of elementary education, and increase their skill in guiding child growth and development toward socially desirable behavior.

Parents and other interested citizens can find more ways to participate and see more tangible results from such participation when the planning is done in terms of the immediate neighborhood. Teachers and laymen soon lose interest in a program of curriculum improvement that is initiated by the central office unless it deals directly with problems relating to the individual school with which they are associated. This is illustrated in situations in which curriculum experts are brought in to initiate and carry out the program of curriculum improvement. When the local professional staff surrenders its function of leadership to outside experts, it is not surprising that practices soon slip back to where they were before the program began. The central factor in curriculum improvement must always be the local professional group; consultants should be brought in only to supply expert knowledge and skill to supplement those of the local group.

How can the staff of an individual elementary school organize for curriculum improvement? What problems are ordinarily studied and how are they selected? How can parents and other interested citizens be brought into the program? These problems are being solved in a variety of ways by good elementary schools throughout the country.

In one public school system the teachers in the primary grades of several elementary schools became interested in improving practices in reporting to parents on the progress of children in school. The coordinator of elementary education in the school system worked with the principal of the several schools and arranged for a series of discussion groups at the several school buildings. The principal, teachers, and parents explored the purposes of reporting to parents, the relationship between reporting practices and the philosophy of the school, and various types of reporting practices in use in other elementary schools. Out of these discussion groups came plans for experimenting with different types of reporting and for getting the reactions of pupils, teachers, and parents to the various practices. A system-wide committee was selected to work out, with the approval of the superintendent of schools, the general features of a program of reporting to parents that could be used in all of the elementary schools in the city.

In the same school system, the teachers and principals were dissatisfied with the degree of departmentalization existing in the intermediate and upper grades. For more than a decade the teachers in these grades had each been teaching one subject, such as penmanship or spelling, to ten groups of children throughout the school day. Thus, one teacher would teach penmanship to ten groups of children during the day and another teacher would teach art to a different group of children every twenty minutes throughout the school day. The principals and teachers realized that this practice left little opportunity for the teacher to get acquainted with the individual child, to offer guidance as well as instruction, and to provide experiences in cooperative learning. A similar organization was used to study this problem, to visit elementary schools in school systems in which the self-contained classroom was used, and to plan for a more unified organization of the instructional program.

The program for curriculum improvement in the school system just mentioned began with problems with which teachers and principals were concerned; involved the participation of principals, teachers, pupils, and parents; led to an interchange of ideas on a system-wide basis; brought in ideas from other school systems; used consultant services from the state university to supplement local leadership; and set a pattern for cooperative action in the solution of many other problems confronting the entire school system. It resulted not only in improving practices in many areas of the school program but improved staff morale, increased desire for additional professional preparation, and a noticeable pride in the accomplishments of the school system.

The Need for System-wide Organization

The emphasis on the individual school as the center for initiating and operating the program of curriculum improvement does not minimize the need for system-wide organization and for leadership and stimulation from

the staff of the central office. In many of the larger school systems each school is represented by a teacher and the principal in a system-wide curriculum council or council on instruction. In some systems there is an intermediate group, called a regional council, between the individual school staff and the system-wide council. It is the responsibility of the system-wide curriculum council to maintain a program for the kindergarten through senior high school which is unified but flexible enough to allow for special needs and problems of communities served by the several building units. Although these system-wide councils allow for initiative on the part of the faculties of local building units, they provide guidance, stimulation, and an over-all view of the school program for the staff of the individual school.

The system-wide curriculum council is a policy-making group on such matters as obtaining financial support for the instructional program, developing bulletins needed by teachers, releasing teachers for curriculum work, and receiving an accurate impression of the reaction of the public to the program of the schools. In addition to the work of the curriculum council, the personnel of the central office provides support for sound curriculum-improvement work in individual schools. They may provide leadership in establishing preschool work conferences, workshops, and training programs for principals and committee chairmen. They may also arrange to have teachers released from classroom duties one-half day each month for cooperative group work relating to the improvement of the curriculum through professional growth activities, a substantial part of which is devoted to committee work in the building unit.

Providing for Participation by Laymen

The idea that the school alone cannot provide an adequate education for the modern child—that it requires the whole community—is emphasized throughout this book. Elementary school principals and teachers are realizing increasingly the importance of working closely with parents and other interested citizens in improving the school program. Many elementary schools, however, fail to utilize fully the contributions of laymen to the improvement of the school program, either because they do not fully understand its importance or because they have failed to organize properly for it.

Lay participation at the individual-classroom level is relatively simple to arrange. Many teachers make use of the special knowledge, hobbies, and talents of laymen in the community in relation to many aspects of the curriculum, such as science, story telling, local history, information about foreign countries visited, art work, and excursions. There are relatively few schools, however, in which every teacher is making full use of consultant-laymen.

Lay participation at the individual-school level is also common. The improvement of the health program, education for family living, the develop-

ment of a better system of reporting pupil progress, work with committees in the preparation of a list of objectives for the school, improvement of the school library, and more effective use of audio-visual materials are some of the ways in which laymen are helping to improve the school program. In the better elementary schools, the staff would not think of making any important change in the school program without first discussing it with interested laymen in the community.

Lay participation in the formulation of policies and plans for curriculum improvement at the system-wide level is *also important. In some systems* provision is made for this by adding lay representatives to the curriculum council; in other systems a separate lay advisory committee has been formed to work with the curriculum council upon invitation.

Plans being used for involving laymen in curriculum-improvement programs vary greatly from one situation to another. Although these plans contain valuable suggestions, it is the responsibility of the leadership in each school system to develop the plan best suited to local needs and circumstances.

Using Outside Consultants

The practice is becoming rather common of inviting outside consultants to help with the program of curriculum improvement either at the individual-school level or at the system-wide level. These consultants usually come from a teacher-education institution, from the state department of education, or from another public school system. The use of outside consultants is based on a valid assumption that an outsider can frequently arouse more interest in curriculum improvement, can help the local staff look at the program more objectively, and can bring special knowledge and skills to bear on the solution of problems. These values can be achieved only when the consultant selected brings to the task the competencies needed, knows well in advance what will be expected of him, and does not go into a strange school system and begin to criticize everything he sees going on in it.

Few school systems have on the professional staff enough individuals sufficiently trained in research procedures and the techniques required in curriculum improvement to be able to carry on the program without consultant services from the outside. The job of the consultant is to help the local staff learn how to solve their problems themselves rather than to provide the answers. The consultant is concerned with helping the professional staff and the laymen involved to define their problems and to find the resources and procedures by which the problems can be solved. The services of the consultant should be such that the local professional staff becomes less and less dependent upon him as the program progresses.

Providing Time for Curriculum Work

The curriculum-improvement program that involves adding two hours once a week or twice a month to the heavy schedule of work that teachers are already carrying defeats some if not all of the purposes for which the program exists. Unless curriculum work is regarded as an integral part of the teacher's load rather than something extra that is added at the expense of the time the teacher has left for relaxation and for looking after personal problems; unless at least most of the work can be done on regular school time for which the teacher is paid; unless a better time can be found for it than the hour or so immediately after school, when teachers are worn out by the duties of the regular school day; unless some solution can be found for the problem of finding time for curriculum work, the improvement program is almost certain to result in failure.

Fortunately, several ways have been found to solve the problem of time. Teachers are paid for ten months although schools are in session only nine months; thus time is available for curriculum work before school begins. Summer workshops are conducted jointly by the local school system and a teacher-education institution where teachers can work on curriculum programs while earning credit toward degrees. School is dismissed for a half day once or twice a month to allow time for committees to meet for curriculum work. Releasing one or two teachers from classroom teaching for a semester or a year to prepare or edit curriculum materials provides another means of getting a specific job done.[6]

Moving from Discussion to Action

One complaint frequently heard from teachers in regard to curriculum-improvement programs is "We talk, talk, talk, but we never do anything about it." Curriculum improvement is, of course, a long-range program, but we cannot sit around and wait until all the facts are in. If the official leader takes too seriously the advice "You must not go too fast," the faculty is likely to conclude that they didn't get anywhere. To agree rather quickly on a working philosophy, which can be revised later, is better than taking a whole year to work on a statement of objectives that is considered to be the last word. Working up some resource units that contain materials and activities that can be tried out immediately in the classrooms is better than holding everything up until the "new" curriculum can be "installed." School leaders who are always absorbed in building a background through study and discussion without ever putting any of the ideas into practice are like the man who

[6] The way in which the schools in Battle Creek, Michigan, Denver, Colorado, Kingsport, Tennessee, and Philadelphia, Pennsylvania, have found time for curriculum work is explained in Caswell, and others, *Curriculum Improvement in Public School Systems* (New York: Bureau of Publications, Teachers College, Columbia University, 1950), pp. 125–126, 157, 198, 205, 288–289.

took a two-mile run to get up momentum for jumping a fence: When he got to the fence he was too exhausted to jump.

Closely related to the problem of moving from discussion to action is the responsibility the administration has for acting upon the decisions of the group. To have committees at work for months on projects that are ultimately shelved by the administration is destructive of staff morale as well as a waste of human energy.

TECHNIQUES OF WORKING TOGETHER

Leadership in the modern elementary school is an enterprise in human relationships. It involves the use of techniques for group management that have proved successful as practice in the elementary school has moved away from autocracy toward democracy. Democracy, no less than despotism, requires the mastery of techniques. If groups of teachers are to formulate their own purposes rather than accept the purposes of the official leader, if they are to make their own plans for achieving those purposes, then it is the function of the leader to help them master the techniques for formulating purposes and getting these jobs done. This section deals with some of the promising techniques that have been developed for helping teachers learn to work together effectively.

The Teachers' Meetings

On the basis of the generally accepted principle that education should help individuals do better the worthwhile things they will do anyway, teachers should certainly be interested in the improvement of teachers' meetings. Most teachers spend a great deal of time attending staff meetings of various types, and few would deny that these meetings could be improved. Unless teachers' meetings exemplify the principles of good teaching, the time is largely if not entirely wasted. In the old type of meeting, which was formal and stilted, teachers were called together for routine business, announcements, or to listen to a lecture by the principal or a visiting college professor. The teachers expected little in the form of ideas for better teaching; they felt that the meeting belonged to the principal and that they represented a waste of valuable time.

If teachers can be made to feel that the meetings belong to them, if the agenda is prepared by a committee of teachers, if a pleasant meeting place is provided and an informal atmosphere is maintained, teachers' meetings can result in professional growth for the entire staff.

If teachers' meetings are to promote professional growth, they must be organized around problems that teachers consider important in their work with children. This is not likely to be accomplished if the principal always prepares the agenda and presides at all the meetings. The agenda should be

prepared by a committee of teachers elected by the entire faculty for the purpose of planning and conducting teachers' meetings. The agenda containing the items to be discussed should be made available to all members of the staff before the meeting so that each member can be prepared to discuss the items listed. Opportunity should be provided for any member of the staff to hand to the chairman of the committee any item he wants placed on the agenda. Opportunity should also be provided for items to be added to the agenda at the beginning of each meeting. Membership of the committee should be changed frequently in order to make it possible for more teachers to participate in planning the meetings and in assuming responsibility for their success. The chairman of the planning committee should ordinarily preside at the meeting, although another member may be requested to preside if the problem for discussion happens to be one in which he is particularly interested. The planning committee may also be responsible for selecting a meeting place, arranging the furniture, providing refreshments, and securing consultants for the meeting.

The room selected for the teachers' meeting is a very important factor; the worst possible place is a classroom with rows of screwed-down desks. If at all possible, the regular meetings should be held in a room in which the seats can be arranged in a circle or a semicircle. If meetings are held after school, it is desirable to devote the first part of the meeting to social activities and to serving refreshments; this helps to bridge the gap between the regular classroom activities and participation in the teachers' meeting, and it allows the members of the staff to arrive at different times without the embarrassment of breaking into the meeting after it has started.

The time when teachers' meetings are held must be determined by the staff after all factors have been considered objectively and after experimenting with various times. In some schools the hour before school starts in the morning has been found satisfactory; some have met at the noon hour, at dinnertime in the evening, after dinner, or on Saturdays. The most common practice, of course, is to meet after school is out in the afternoon. The length of time needed for the meeting is a determining factor in deciding when it should be held. Some schools have one short meeting each week for routine business and a longer meeting once a month for discussion of policies and long-range planning. The staff may also want to meet on call for a dinner or after-dinner meeting on occasions when an out-of-town visitor is present.

The Curriculum Workshop

Workshops have been conducted on university and college campuses and in public school systems for many purposes and by a variety of procedures during the last fifteen years. Some have been well staffed with competent consultants capable of giving expert guidance to teachers seeking help in many aspects of the public school program, such as the uses of radio and

television in education, conservation education, guidance, selecting and building tests, or the education of exceptional children. Others have had a single staff member available to assist in working out plans for the improvement of a single area in the curriculum, such as social studies.

Some workshops have been organized primarily for the purpose of providing professional growth for the participants. An example of this type is the Annual Association for Childhood Education Workshop, sponsored jointly by the Oklahoma branch of the Association for Childhood Education International, the College of Education, and the Extension Division of the University of Oklahoma. From 60 to 160 elementary school teachers and principals from Oklahoma and nearby states have been attending these two-week workshops. The staff consists of a full-time director, two lecturers—one for each of the two weeks—who have always been selected from the outstanding authorities in various phases of elementary education, and ten or more leaders for the studies and discussion groups in teacher-pupil recreation, ceramics, children's speech, children's literature, the use of audio-visual materials, mental hygiene, creative arts, elementary school science, and child development.

The participants in this workshop and many of the staff members live in the building in which the workshop is held, have their meals together, and participate in various social and recreational activities. Membership in this workshop is not limited to any particular type of teacher; no effort is made to conform to the criteria set up by experts as the essential features of a workshop; and no patterns are imported from workshops carried on at other places. Rather, it represents an indigenous movement developed to meet conditions existing in the elementary schools of Oklahoma. The fact that it has been called a workshop could no doubt be traced to the fact that someone on the original planning committee had heard of workshops' being held elsewhere, but neither those who have been in charge nor the participants have ever been concerned about how far the practices were out of line with the aims and ideals of the workshop concept. At any rate, the writer has found teachers in remote sections of the state who give much of the credit for their increased competence to the ACE workshop.

Another type of workshop is the one that is established to produce instructional materials to be used with adaptations by the participants and by other teachers. For this type of workshop the participants are carefully selected in terms of their ability to produce outstanding materials rather than their need for help from the workshop. Of course, it is expected that participants in any workshop will benefit from the experience in the form of professional growth, but the participants in the production type of workshop are selected primarily because of the competence they have already attained rather than on the basis of the competencies they need to develop through the workshop experiences.

The production type of workshop usually has a director, a secretary and librarian, and several consultants selected because of their competence in the various curriculum areas for which instructional materials are to be prepared. This type of workshop requires a meeting place large enough to accommodate the entire group of participants and a number of smaller seminar or conference rooms for meeting places for the various committees. Materials relating to the various curriculum areas should be at hand and adequate secretarial help should be available.

These brief sketches of types of workshops illustrate the principle that there need be no rigid pattern of workshop procedure. It is true that the early workshops sponsored by the Progressive Education Association for the staff members of the thirty schools involved in the eight-year study exhibited certain common characteristics and that many workshops sponsored by colleges and universities without financial support from an outside agency tried to follow as closely as possible the procedures used in these early workshops. It is also true that some summer sessions have tried to attract students by attaching the name "workshop" to regular summer-session courses. It should be obvious, however, that a workshop, like any other device used in public education, must be adapted to time, place, and circumstance.

Downes calls attention to the fact that workshop procedures, when used in teacher education, are based on the same principles of learning as those utilized in the modern classroom.

> The chief virtue of the workshop is in its emphasis on learning by doing—perhaps another way of saying that twenty-five years after John Dewey's idea began to be applied in the education of children, someone realized that it might be valid also for those persons who were already practicing it on children. If purposing, planning, executing and evaluating are desirable learning activities for children, they are also important for adults. The corollary to this assumption as applied to a workshop—and essential to it—is the workshop's emphasis on informality, social experience, individual initiative and responsibility, and personality development.[7]

The workshop movement has grown rapidly since the Progressive Education Association provided the idea and the General Education Board of the Rockefeller Foundation furnished the funds for the first workshop at Ohio State University in the summer of 1936. The Progressive Education Association sponsored three workshops the following summer—at Columbus, Ohio, Bronxville, New York, and Denver, Colorado, and by 1939 was sponsoring ten. By that time the workshop was installed as a regular feature of the summer-session program in almost every college and university participating in the preparation of teachers. Since the nation-wide curriculum projects in mathematics, science, economics, and other areas have developed, workshops

[7] James E. Downes, "An Evaluation of Workshops," *Elementary School Journal*, April 1947, p. 446.

and summer institutes have become popular procedures for meeting teacher deficiencies in content areas.

Curriculum Committees

One of the first steps in organizing the staff for curriculum improvement has usually been to divide the entire staff into committees that meet regularly to study and evaluate school practices. These committees usually prove to be the very heart of the curriculum-improvement program. They make suggestions and recommendations to the curriculum council, which in turn examines the proposals in terms of the system-wide approach to problems and then returns the proposals, with recommended modifications, to the committees for final action. Committees are usually more successful when they are relatively small, when they represent a cross-section of the school system, when the members of the committee understand clearly the relationship between their work and the over-all program, and when committee work is considered a part of the teachers' regular duties.

Preschool Conferences

The fact that teachers in many public school systems are now paid for ten months rather than nine makes it possible to call the staff together for a planning session before school opens in the fall. These conferences vary in length from two days to two weeks or longer. The agenda is usually prepared cooperatively by the administrative staff and the teachers in order to make sure that the problems discussed are the ones that are considered important.

Time is usually provided both for general sessions and for meetings of special-interest groups. Consultants are usually selected cooperatively by the staff and paid by the board of education. It is not unusual for a public school system to bring in specialists in several areas of the school program from outside the state.

The objectives of the preschool conference include the following:

1. Plans for the program of curriculum improvement for the coming year;
2. Assist new teachers in becoming acquainted with members of the staff, the philosophy and practices of the school, and the mores of the community;
3. Plan for a more effective use of instructional resources;
4. Develop a friendly working atmosphere among school personnel, parents, and other interested citizens;
5. Foster democratic group processes in the school system.

Local, state, and national associations are exercising an increasingly important function in encouraging principals and teachers to participate in cooperative efforts relating to curriculum improvement. Teachers who take part in the convention programs of these voluntary associations gain experi-

ence in group discussion techniques, find out how problems are being solved in other schools, and develop a greater understanding of the teaching profession. The yearbooks, bulletins, and magazines of professional associations help to keep teachers and principals informed concerning recent developments in elementary education.

So much value is recognized in this technique for teacher improvement that many school systems are providing substitute teachers and even paying the traveling expenses of those taking part in national conventions. Frequently classes are dismissed for a day or two to allow all teachers in the school system to attend state or district conventions.

Other Techniques

The techniques listed here through which teachers can learn to work together are only illustrative. Developing a materials center, providing a professional library for teachers, summer camps for both pupils and teachers, travel seminars, demonstration teaching, interclass and interschool visitation, and many other techniques can be used effectively.

SUMMARY

1. It is the responsibility of instructional leadership to help the staff develop an organization through which each member can participate in the manner best suited to his talents in the improvement of the elementary school curriculum.

2. Teacher education, both preservice and in-service, should provide opportunities for teachers to develop competence in workshop procedures, in the techniques of group discussion, in the procedures used in community analysis, in modern methods of child study, and in effective methods of working with laymen.

3. Instructional leadership in a democracy is based on certain principles that mold the leader's thoughts and guide his actions when entrusted with the success of others. Instructional leadership is based on intelligence, personal integrity, and the common touch. Good leadership promotes an atmosphere of mutual respect and trust, is inconspicuous, builds morale, and requires foresight and courage.

4. Supervision is no longer regarded as dictation and inspection; it is now regarded as guidance and coordination. Supervisors are regarded as resource persons subject to call whenever and wherever their services are needed.

5. The individual school is the operational center for curriculum study and improvement.

6. It is the responsibility of the system-wide curriculum council to maintain a program from the kindergarten through the senior high school which is unified but flexible enough to allow for the special needs and problems of communities served by the various building units.

7. Elementary teachers and principals are realizing increasingly the importance of working closely with parents and other laymen in improving the elementary school program.

8. The task of the consultant is to help the local professional staff define its problems and find the resources and procedures by which the problems can be solved.

9. Unless curriculum work is regarded as an integral part of the teacher's load instead of something that is added, the program is almost certain to result in failure.

10. It is the responsibility of instructional leadership to see that too much time does not elapse between the talk stage and action stage of the curriculum-improvement program.

11. Teachers may learn to work together effectively through teachers' meetings, curriculum workshops, curriculum committees, professional associations, discussion groups, and preschool conferences.

SELECTED READINGS

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Krug, Edward A., *Curriculum Planning.* Rev. ed.; New York: Harper & Row, Publishers, 1957. Chapter 10 deals with curriculum planning in local schools and school systems. Explains the functions of consultants, workshops, and committees.

Mackenzie, Gordon N., and Stephen M. Corey, *Instructional Leadership.* New York: Bureau of Publications, Teachers College, Columbia University, 1954. Reports on three years of cooperative study undertaken to improve instructional leadership in the Denver, Colorado, public schools.

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Schmidt, Warren H., and Paul C. Buchanan, *Techniques that Produce Teamwork.* New York: Appleton-Century-Crofts, 1954. Gives suggestions for setting up goals that make sense to the group, getting staff members to accept responsibility, bringing problems into the open, measuring group growth, and developing team spirit.

Wiles, Kimball, *Supervision for Better Schools.* Second ed.; Englewood Cliffs, N. J.: Prentice-Hall, Inc., 1955. Shows how supervision requires skill in leadership, in human relations, in group processes, in personnel administration, and in evaluation.

Yauch, Wilbur A., *Improving Human Relations in School Administration.* New York: Harper & Row, Publishers, 1949. Chapter 4, "Teachers' Meetings," is particularly valuable.

SELECTED FILMS

The following films do not deal specifically with the supervision of instruction or with organizing the school staff for cooperative action. However, they do deal with supervisory practices in industry and in the classroom which have important implications for educational leaders in their relationships with teachers.

A New Supervisor Looks at His Job. A twelve-minute sound film in which a young workman who has just been made a line supervisor is shown in an interview with the superintendent. He is told that in his new job he must learn to get results by working with people instead of with machines. The importance of the human element in supervision is made evident. (U.S. Office of Education)

Developing Leadership. An eleven-minute sound film that illustrates the qualities required for effective leadership, how to become a leader, and how leadership in a democratic group changes with the will and interests of the group. (Coronet Films)

How to Get Cooperation. An eleven-minute sound film presenting methods of securing cooperation in a school situation. (Coronet Films)

The Supervisor as a Leader. (U.S. Office of Education)

   Part I.   A fourteen-minute sound film in which several workmen are asked what they consider to be the qualifications of a good supervisor. To them the four most important are: never take credit for someone else's work, don't pass the buck, don't play favorites, and always keep promises.

   Part II.   A thirteen-minute sound film that points out that the good supervisor is not afraid to praise his men for work well done.

Palmour St.   A thirty-five-minute sound film explaining how parents in rural Georgia help their children compensate for poverty in their homes. (Capital Film Laboratories)

Problems and Projects

   1. The question of who is to furnish leadership for curriculum improvement has received different answers in the last two decades. For years, leadership was under the control of professional organizations of teachers and administrators. Together they formed what is often referred to in the press as The Establishment. As was pointed out in the previous chapter, members of The Establishment were concerned chiefly with the how of curriculum organization, while pressures mounted for concern over content and role. A good deal of the pressure came and continues to come from the federal government. For the first time in American educational history, Washington influences what is to be taught in the schools and what role education should serve. It influences what is to be taught by federal support of foreign language, science, and mathematics teaching. It influences the role education is to play through such programs as Headstart. Prepare special reports on each of these influences, including details of support for your state. Is your local school system benefiting from any federal grants? If so, how?

   2. A phenomenon that has recently emerged on college campuses is the student activist. His activity takes several forms. He is concerned with national and international problems, and he is also concerned with the quality of his education. He does something about both of these areas of concern. With respect to his own education, he seeks to participate actively in making policy regarding curriculum and government of student affairs.

   Elementary schools encourage pupil activities but within the highly structured and closely controlled frame of the student council. All too typically the problems the council deals with are such problems as litter on the school grounds and noise in the cafeteria. They are problems that concern the school principal, but are not always of vital interest to pupils.

   Poll fellow students to find out the kinds of problems their local student councils dealt with. Do these problems tend to reflect a company-union approach to student government? Give examples of others that reflect areas of

real concern to elementary pupils. Should there be limits to the type of problems a council deals with?

3. Curriculum revision work takes several forms. In one, teacher committees start from scratch to develop courses of study under the supervision of a curriculum director. The finished product lists the learnings to be accomplished in various subjects. Thus a fifth-grade course of study in social studies lists under the unit, "United States: Its Beginnings" such topics as "reasons settlers came to the new world;" "people involved in settlement;" "characteristics of colonial life;" "contributions of nationalities and races." From your college course in American history, would you say that these are the concerns of the historian? Check with a good college history text.

In a different approach to curriculum revision, teachers meet with academicians in history, geography, and civics. The teachers take "refresher courses" as they explore with the academicians key concepts in each area. These concepts form the core of the new course of study. What are the advantages of such a plan? What is the place of the curriculum director?

PART III

Curriculum Areas

The
Language Arts

The
Social Studies

The
Fine Arts

CURRICULUM
AREAS

Mathematics

Health and
Physical Education

Science
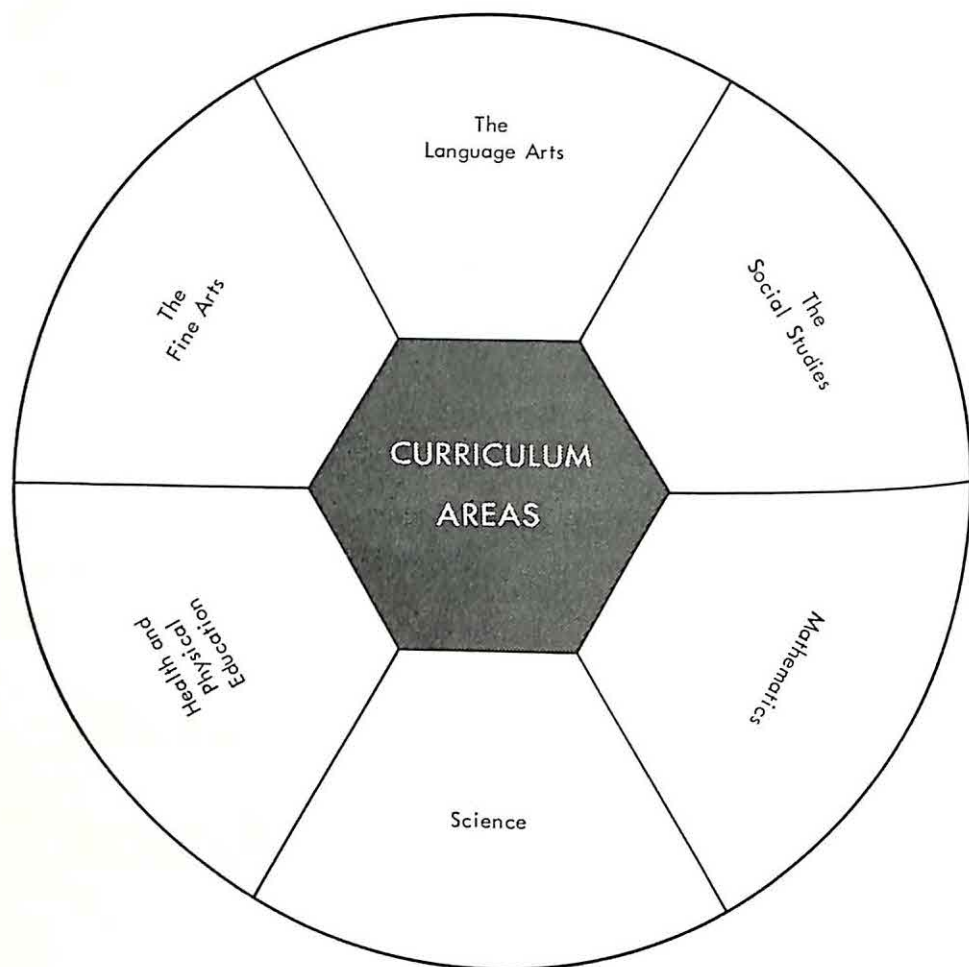
Part III is concerned with the why, the what, and the how of teaching six broad fields that are generally included in the elementary school curriculum. The chapters in this section explain how the principles derived from a study of curriculum foundations and curriculum organization apply to the teaching of school subjects. Each chapter begins with an explanation of why the particular curriculum area is important in the life of the child and why it serves as means of achieving the purposes of the school in our society. Each chapter indicates significant content that must be included if the purposes of the school are to be achieved. Each chapter provides suggestions for vitalizing the teaching in a particular curriculum area. The influence of recent curriculum-improvement projects on the content and methods of each curriculum area is explained.

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Communicating: The Language Arts

9

The abstractness of language is the source of its
power to express an infinite variety of experiences
and to represent the real word in all its depth and
complexity. By this miracle of language the boundless
world is open to shared understanding.
—Philip H. Phenix, *Realms of Meaning* (New York:
McGraw-Hill, Inc., 1964), p. 70.

The need for communicating appears early in infancy and increases in
importance as the child becomes a member of larger and more complex social
groups. The effective use of language is a prerequisite to understanding and
cooperation at all levels of social relationships, is closely associated with the
thinking and behavior of the child, and is an important factor in the devel-
opment of his personality. Since language is used in every phase of the school
program, it has been called the "cement" that holds the curriculum together.

The language-arts program has been changing rapidly in the last two
decades as teachers have gained a better understanding of the nature of learn-
ers and the learning process, the social uses of language, and the broader
objectives of the elementary school. The program in the better elementary
schools places less emphasis on drilling the forms of language and more em-
phasis on its use in meaningful situations. Language activities are more
closely related to the everyday experiences of children, adapted to individual
differences in abilities and interests of pupils, and integrated with other phases
of the school program. Considerable progress has also been made in using
knowledge obtained from the field of linguistics for improving instruction
in the language arts.

This chapter deals with some of the major features of a modern language-
arts program, the findings of some of the more important studies that have
been made in the language-arts field, and problems and issues relating to the

teaching of the language arts. It contains a brief summary of the purposes, programs, and trends in reading, listening, handwriting, spelling, oral and written expression, children's literature, and second languages in elementary schools.

MAJOR FEATURES OF A MODERN PROGRAM

Good elementary schools do not leave the development of language abilities to chance; the program is carefully planned so that each child becomes as efficient as possible in the use of language. It provides for both the incidental learning of language in connection with the everyday activities in which children normally engage and for the systematic teaching of language during periods set aside specifically for that purpose.

Educational research and the experience of successful teachers have provided many guidelines for the development of a functional program of language-arts instruction. An analysis of some of the major features of a modern program of language-arts instruction is essential if teachers are to see clearly the goals toward which they want to work.

Broader Objectives

There is general agreement among teachers and parents that children should be taught to read well, listen attentively, speak clearly, write legibly, and spell accurately. However, teachers and parents do not always understand what is involved in reading well or spelling accurately. Reading, for example, involves much more than mere word calling; it involves ability to comprehend what is read, independence in word recognition, ability to use an index and table of contents, ability to skim through material rapidly, development of attitudes favorable to reading, ability to get information needed from reliable sources, and so on.

There is a wide difference, also, between learning to spell the words in the daily spelling lesson and habitually using correct spelling in all written work done at school and elsewhere. The teacher who understands the broader objectives of spelling provides many opportunities for children to learn to spell in connection with units of work and other curriculum areas.

A clear understanding of the desired outcomes is obviously an important step in planning a program of language-arts instruction. A functional program cannot be developed unless consideration is given to the part that language plays in the growth and development of the child and in the success of our way of life. It is through the use of language that the child changes from a self-centered to a social being and develops the ability to participate in the social life of his group. The success of a democracy depends to a large extent upon the ability of citizens to communicate freely with one another. The modern program in the language arts, therefore, is concerned not only with

the mastery of the forms of language but with the use of language skills in meaningful situations where they are needed in solving real problems, in participating in planning what is to be done, and in contributing effectively to the work of the group. Understanding, appreciation, attitudes, and interests as well as knowledge and skills are receiving increasing attention in the modern program in the language arts.

Growth of Language Activities through Experience

The language-arts activities in many elementary schools grow out of the everyday experiences of children such as trips, pets, toys, vacation experiences, and current happenings. A fifth-grade boy who had attended a Cub Scout day camp was eager to tell the class about his experiences, although he had previously been timid about participating in oral-language activities. A first-grade teacher, upon showing the class a film about the passenger train, discovered that few of the children had ever taken a train ride. The parents cooperated, arranging to take the children on a train ride to the nearest town, about fifteen miles away. The next day the children were eager to talk about their experiences and an experience chart was developed. It consisted of such sentences as the following:

> We took a ride on the train.
> We walked to the station.
> We bought our tickets at the station.
> We gave our tickets to the conductor.
> We looked out of the train windows.
> We saw some cows in the pasture.

Educational research supports the practice of helping children develop a knowledge of words and skill in expression by providing contacts with the real world around them. Bloom and others have reported that, on the average, children from culturally deprived homes fall behind grade norms in reading by as much as three years. They have indicated that the absence of objects in the home, the lack of interest in learning on the part of parents, and limited conversation and encouragement the child gets in the home are significant in the failure of these children to progress at the normal rate in language.[1]

The Unified Language-Arts Program

The unified language-arts program, with longer periods for uninterrupted work, is in harmony with modern principles of learning. Organizing the activities around large centers of interest capitalizes on the natural interrelatedness of the language arts, develops skills as they are needed in meaningful situ-

[1] Benjamin S. Bloom, Allison Davis, and Robert Hess, *Compensatory Education for Cultural Deprivation* (New York: Holt, Rinehart and Winston, Inc., 1965), pp. 69–75.

ations, contributes to individual pupil needs, and develops independence in study.

There is increasing recognition of the interrelationships existing among the language arts. Listening, speaking, reading, and writing are all concerned with the use of words as symbols and with the exchange of ideas. The child's growth in one aspect of language does not take place independently of growth in other aspects. Although the child listens before he talks, talks before he reads, and reads before he writes, these abilities are not developed in sequence so that one is completed before the other is started. Each of the language activities contributes to the others and none of them can be taught well in complete isolation from the others.

Educational research and teaching experience indicate that skills are learned more efficiently when they are put to some real use—learning to spell words used in an invitation or announcement, reading to get information needed in a unit, or speaking clearly and distinctly in reporting an actual experience to the class. After a visit to the zoo, a group of children will have many desirable learning experiences such as writing stories, dramatizing events, and sharing ideas. Separate periods for drill may be scheduled when needed.

The unified program makes it possible to adjust activities to a wide range of abilities and interests. The slow-learning pupil as well as the extremely talented one can make his own contribution to the activity without having to be rated in terms of the accomplishments of others. Since the unit involves a variety of activities, each child can work at a task that is appropriate for him and be recognized by the group for his unique contribution. When textbooks prove too difficult for some pupils, as they frequently do, the opportunity to work with many types of material from many sources offers a solution to the problem of individual differences. The additional interest shown by children in the unit type of program leads to greater effort and more independent habits of work.

A Wider Use of Books and Other Resources for Learning

Instruction in the language arts once consisted primarily of teaching children the contents of the basic texts in reading, spelling, and grammar. The single text has been supplanted in modern elementary schools by multiple texts, library books, magazines, newspapers, mimeographed materials, workbooks, children's encyclopedias, and many other types of instructional material. The new type of language-arts program, with its emphasis on unified learning, calls for the use of every type of material the community can furnish to serve the language needs of children.

Instructional materials are selected cooperatively by teachers, principals, children, and parents. If the material needed cannot be purchased from the school budget, children and parents cooperate in raising funds and purchasing additional material.

Educational research has contributed greatly to the improvement of text-books and other reading materials for children. Rinsland collected more than 200,000 samples of the writing of elementary school children from all sections of the United States in an effort to find the frequency of the use of words, grade by grade.[2] The results of this study have been used extensively by teachers, authors, and students. This study is but one illustration of the current efforts to apply to the education of children the lessons learned from careful studies of children themselves.

Recognition of Changes in Language Itself

Changes in the elementary school curriculum during the last few years have been influenced to a large extent by an increasing emphasis on the structure and contributions of disciplines such as English, mathematics, science, geography, and economics. Scholars in these and other academic disciplines have become more active in developing programs for elementary schools. They have become concerned about teaching more content, different content, and a different approach to teaching.[3]

The language-arts program in modern elementary schools is becoming more effective as principles derived from the study of linguistics are utilized. One of these principles is that language is in a condition of constant growth and change. Another principle is that the actual changing usage of people constitutes the basis of all the "correctness" there can be in language. Fries has provided some interesting illustrations of these principles in connection with the new view of language represented by the *Oxford English Dictionary*.[4] The editors of this dictionary had in hand more than 6 million dated quotations as a basis for their conclusions; the final part came to press seventy years after the collection of data started. The word "nice" appeared in this work as meaning general approval; and it has appeared in our literature with that meaning ever since that time. Before that it had been used to mean stupid, hard to please, and carefully accurate.

Language Problems of Culturally Deprived Children

There is much to be said about the special problems faced by children from the slums and from other low-income areas. Davis has written, "At least one-third of our total population consists of slum dwellers, tenant farmers, and farm laborers. These sixty millions of our people, white and Negro, have children who do not learn well in our schools as they now operate."[5]

2 Henry D. Rinsland, *A Basic Vocabulary of Elementary School Children* (New York: The Macmillan Company, 1945).

3 Association for Supervision and Curriculum Development, *Using Current Curriculum Developments* (Washington, D.C.: The Association, 1963).

4 Charles C. Fries, *Linguistics and Reading* (New York: Holt, Rinehart and Winston, Inc., 1962), Chapter 2.

5 Allison Davis, in *New Dimensions for Educational Progress* (Bloomington, Ill.: Phi Delta Kappa, 1962), p. 29.

Largely because of conditions existing in their homes, many children are subjected to unfair competition from the day they enter school, fail to achieve as much as their ability would permit, and never seem able to enter fully into the life of the group. The language expected in the classroom is different from that which is used in their homes, the words used in textbooks are not their words, and the stories they are expected to read are far removed from their out-of-school experiences. Assignments that are reasonable for children from homes with an abundance of magazines and reference books frequently represent almost impossible tasks for these children. If the language-arts program is to have any meaning for these children, it must take into account the circumstances in which they live. Grambs has suggested several steps that can be taken by the school to provide reading materials that relate more directly to life as these children experience it and to help these children develop a positive image of self.[6]

TEACHING THE CHILD TO READ

Teaching children to read has always been one of the most important responsibilities of the elementary school. Every child needs to develop his reading ability fully in order to succeed in school and to discharge his responsibilities later as a citizen of a democratic society.

Reading is the foundation of much of the enjoyment the individual gets out of life and is closely related to vocational efficiency. Reading is intimately related to the success of the democratic way of life. The citizen needs to understand the meaning of democracy and to keep well enough informed to act wisely in its behalf. He needs the ability to detect pernicious propaganda, to weigh the opinions of others, to talk intelligently, and to work effectively with others. American citizens are in a position to make decisions that influence the lives of most of the people in the world. To decide intelligently requires a high level of reading ability.

Since the child needs considerable ability in reading in order to succeed in school, since the adult in our society needs to do a great deal of reading both as a leisure activity and in order to keep up with his vocation, and since the success of our democratic way of life depends to a great extent upon the ability of citizens to read, it is understandable that much attention has been devoted to the improvement of reading instruction. Learning to read is a complicated process, and the teaching of reading requires a thorough understanding of modern methods of teaching, familiarity with a wide range of reading materials, and the ability to understand children.

Many adults can remember when learning to read began with memoriz-

[6] Jean D. Grambs, "Achieving Adequacy through Education," *National Elementary Principal*, November 1964, pp. 9–15.

ing the letters of the alphabet, progressing later to syllables and phonetic word families. A great step forward was taken when children learned words before they learned the letters composing them. The modern approach to learning to read begins with the life experiences of the child. Then the abstract symbols representing those experiences are introduced, in harmony with the psychological principle that learning is experiencing rather than merely memorizing and repeating meaningless symbols.

The Need for Improved Teaching of Reading

There is ample evidence that many children are failing to develop sufficient reading ability to meet the demands of the school curriculum. It has been estimated that approximately one fourth of the failures in the elementary school are caused by a lack of reading ability; that a number of first-grade children, including some with normal or superior intelligence, fail to get a good start in reading; and that many of those who can read have not developed reading tastes of a high quality and do not read widely. Someone has said that there are three kinds of illiterates: those who cannot read, those who can read but do not, and those who read mostly the wrong material.

Such factors as overcrowding of classrooms, rigid promotion policies, inadequate reading materials, and pressure from parents to have children begin reading too early have retarded progress in developing a modern program of reading instruction. The reading program needs continuous study, evaluation, and revision in order to keep it in line with modern principles of learning and the broader objectives of the elementary school. There is urgent need for a better understanding on the part of principals, teachers, and parents of what constitutes an adequate program of reading instruction and for long-range planning for the purpose of giving direction and balance to the day-to-day activities of teachers.

Objectives of the Reading Program

The objectives of a modern reading program include extending and enriching the experience of the child; broadening and improving interests and tastes in reading; fostering the personal-social adjustment of the child; providing worthwhile recreational interests and skills; encouraging critical analysis of ideas; developing resourcefulness in finding information; promoting self-direction; and achieving satisfactory progress in such basic reading skills as word recognition, vocabulary development, and comprehension and speed. If these objectives are to be realized, the scope of the reading program must be extended both vertically and horizontally; reading instruction must extend beyond the elementary school into high school and college, and attention must be given to reading in every phase of the school program rather than merely at specified periods.

The Importance of Reading Readiness

Research relating to child development has shown that readiness to do such things as walking and talking appears at rather definite periods. Of course, the age limits for beginning these activities vary with individual children, but it has been found that forcing a child to begin a specific activity before he is ready causes strain, develops negativistic attitudes, and accomplishes little. A child cannot be expected to make much progress in reading until he is ready for it. Studies of retardation in reading indicate that children who have been introduced prematurely to the mechanics of reading have built up antagonisms to it, have lost confidence in themselves, and have come to expect failure rather than success. When a child is ready for reading he will make rapid progress when taught by any one of a wide variety of methods. A child may be ready for reading anywhere between the chronological ages of four and eight. Girls tend to be more mature than boys of the same age and learn to read earlier. Remedial-reading classes usually have about nine times as many boys as girls.

There is little to be gained from rushing into a program of reading from books before there is evidence that the child is ready for it. Most children who enter the first grade need time to continue to grow, to adjust to group living, and to experience success in small undertakings adjusted to their level of maturity. They need to develop a growing interest in the environment, to develop concepts, to use oral language more effectively, to follow directions, and to develop a desire for learning to read.

Finding Out When the Child is Ready to Read

There are many factors that influence readiness for reading. The teacher cannot assume that a child who does not make satisfactory progress in the initial stages of reading is either stupid or lazy; instead, the teacher should assume that the child is unready for reading in some respect, find out in what respects he is handicapped, and plan a program for correcting his defects. Principals and teachers in the elementary school have no more important responsibility than that of understanding the factors that influence reading readiness and planning a program of activities for developing abilities needed in beginning reading. The following paragraphs call attention to some of the important factors to be considered.

VISUAL DEFECTS   Vision plays an important role in learning to read. Since reading involves receiving and interpreting visual stimuli, it is necessary for the child to have normal vision before he can read comfortably and with enjoyment. Years ago it was very common for teachers to attribute all cases of nonreading to visual defects. If Johnny could not read, all too typically the teacher's advice was, "Take him to an eye doctor. Have his eyes examined." We now know from the results of research that few cases of reading difficulty

are due to faulty vision; the cause is much more likely to be one of the factors to be discussed. Nevertheless, the good teacher, because of his concern for the whole child, will continue to look for indications of visual defects. The child who must hold materials too close or too far away, the child who has to walk up to the board to see what is written, the child who always misses the ball during games, will be noted by the teacher and, when the evidence exists, he will refer the child to a specialist for testing and correction of the difficulty.

IMPAIRED HEARING   It has been estimated that 3 million school children have impaired hearing. Defective hearing may retard speech development, which is closely associated with success in reading, and may contribute to a serious personality problem. Although hearing defects may be discovered by use of the whisper test, the audiometer is a more reliable measure. The *Betts Ready to Read Tests* contain exercises the teacher may use to measure the child's hearing ability.[7]

MENTAL IMMATURITY   Some children do not have sufficient mental maturity to profit from a formal program of reading instruction. Memory span, vocabulary of spoken words, knowledge of spatial relationships, ability to see likenesses and differences in objects and words, and attention span are closely associated with mental maturity. If the child is deficient in any of these abilities, conscious effort must be made to help him develop them to his full capacity before a formal program of reading instruction is introduced.

SOCIAL AND EMOTIONAL READINESS   Some children are not well enough adjusted socially and emotionally to succeed in reading. The child who is unhappy, who has difficulty in learning to live with the group, and who lacks confidence in himself has a difficult time learning to read. These children must be identified and helped to make a happy adjustment to school living before satisfactory progress can be made in reading.

BACKGROUND OF EXPERIENCE   Some children have traveled widely and been taught to observe closely, whereas others have never been out of their own neighborhood; some six-year-olds have attended kindergarten, whereas others have not; some come from homes that have children's books and magazines in abundance, whereas others come from homes in which there is very little reading material. The material in even the preprimers may be entirely foreign to the experience of some children. It is the responsibility of the teacher to identify those children who have had a limited background of experience and provide experiences that will make reading meaningful to them.

The teacher can determine when children are physically, mentally, emotionally, and socially mature enough for beginning reading by using intelligence tests, reading-readiness tests, and systematic observation. Some tests that are widely used for this purpose are the following:

[7] *Betts Ready To Read Tests* (Meadville, Pa.: Keystone View Company).

American School Reading Readiness Test and Lee-Clark Reading Readiness Test, California Test Bureau;

Harrison-Stroud Reading Readiness Profiles, Houghton-Mifflin Company;

Metropolitan Readiness Test, Harcourt, Brace & World, Inc;

Readiness tests that accompany basic reading series.

Although the teacher may want to use one of these tests to check his own judgment, it should be pointed out that readiness tests cannot and should not take the place of careful observation by the teacher. Many children do not do well on readiness tests because of factors in the test situation not in their reading ability. One six-year-old who was reading second-grade material with ease before school entrance almost failed the readiness test because she became confused in following directions. Another able reader did poorly because of his clumsy physical coordination.

The Use of Check Lists in Determining Reading Readiness

Many schools prepare check lists to be used by kindergarten, preprimary, and first-grade teachers in making systematic observations relating to various factors in reading readiness. An example of this type of instrument is shown by the table on the next page.

Developing Reading Readiness

Everything the child sees, hears, and feels must be interpreted in terms of his own experience. The most important item on the agenda of the first year in school is helping the child gain the background of experience that he needs in order to make reading meaningful. The more pleasure the child gets out of school, the better he gets along with other children, the more opportunities he has to talk and to make things with his hands, the more easily he will learn to read. Good kindergarten and primary teachers help children develop readiness for reading through (1) taking trips and excursions, (2) talking about what they see and do, (3) looking at pictures and discussing them, (4) enjoying stories read by the teacher, (5) dramatizing stories, (6) matching words with pictures, (7) seeing likenesses and differences, and (8) playing reading-readiness games.

Traditional Methods of Teaching Beginning Reading

It is difficult for adults to realize how complicated a task it is for a child to learn to walk, to learn to talk, or to learn to read. Learning to read is not a simple process. It is perhaps the most difficult and complex task the child encounters in the process of growing up. It is not surprising, therefore, to find that many children have difficulty in learning to read, that high school and college youth are frequently handicapped by low reading ability, and that many adults do very little reading.

CHECK LIST FOR READING READINESS

Physiological Factors

1. Is there evidence of good organic condition, good nutrition, and good health habits?
2. Is there evidence of normal vision?
3. Does the child notice likenesses and differences in objects, forms, colors?
4. Does he have good general coordination when engaging in games?
5. Does he have a normal amount of energy?
6. Does his hearing seem to be normal?
7. Can he hear likenesses and differences in sounds of words?
8. Does he respond quickly when spoken to?

Psychological Factors

1. Does the child have a wide speaking vocabulary?
2. Can he relate a personal experience in logical sequence?
3. Can he repeat from memory a rhyme or verse?
4. Can he listen attentively to a story?
5. Does he listen to directions and execute them accurately?
6. Can he detect likenesses and differences in word forms?
7. Does he have a normal span of attention?
8. Does he have curiosity about books, things, and places?
9. Does he want to learn to read?

Social and Emotional Factors

1. Does the child enter into group activities?
2. Does he form friendships easily?
3. Does he assume responsibilities well?
4. Is he free from nervousness, worry, and excessive fears?
5. Can he work independently without too much help from the teacher?
6. Does he stay with a task until it is finished?
7. Can he take disappointments without undue display of emotions?

Breadth of Background of Experience

1. Has the child visited parks, zoos, or airports?
2. Has he had many of the experiences he will read about?
3. Does he attend Sunday School?
4. Does the home have children's books and magazines?
5. Has he attended kindergarten?
6. Do his parents encourage initiative and independence?
7. Has he had experience with automobiles, trains, airplanes, and buses?
8. Has he seen many movies?
9. Does the home have a radio or television set?

The evolution of methods of teaching beginning reading constitutes an interesting study. This problem has received such extensive treatment elsewhere that detailed discussion here would be needless repetition.[8] It should be useful, however, to review briefly the principal methods of teaching beginning reading as a background for understanding current methods. For many centuries, the first step in learning to read was memorization of the letters of the alphabet. It has been said that the Hebrew child centuries ago was given edible letters covered with honey so that he could discover "how sweet the process of learning could be."

During colonial times, the content of the first books children were supposed to read was far removed from the experiences and concepts of children. The *New England Primer* contained such sentences as "In Adam's fall we sinned all" and "Peter denied his Lord, and cryed." In Webster's speller, published about 1800, reading was to be taught as spelling. First the letters were learned separately; then they were put together to form syllables; syllables were combined to form simple words; words were combined to form sentences; and, finally, sentences were combined to form a short story.

The alphabet method of teaching beginning reading was replaced by the phonetic method. Instead of learning the letters first, children were introduced to the sounds that occur in many words; words with similar sounds were arranged in vertical columns, and most of the reading program was consumed by formal practice on sounds. After a long period of overemphasis on mechanical drill in phonics as the principal method of teaching beginning reading, a reaction against phonics began in the twenties and reached fanatic extremes in the early thirties. It was claimed that no systematic teaching of specific words by any method was necessary if the child was interested in learning to read and that "the best way to teach reading was not to teach it at all."

By 1940 the failure of unplanned, haphazard procedures for teaching beginning reading became apparent, and parents as well as teachers began to insist that greater attention be given to the development of basic reading programs for the purpose of giving the child more independence in attacking new words.

Developmental reading programs today include a systematic presentation of skills for attacking new words. Even at the preprimer level of reading, the teacher directs the pupil's attention to structural elements of a word—its root, suffixes, and word parts in a compound word. The child learns to read words ending in "-s," "-ed," and "-ing" when he knows what the root word says. He also learns to read words like "something" and "firehouse" which are made up of familiar words.

At the primer level, when the child has built a small sight vocabulary, the

[8] See Gertrude Hildreth, *Learning the Three R's* (2d ed.; New York: Educational Publishers, 1947), Chapter 8; and William S. Gray, *On Their Own in Reading* (Chicago: Scott, Foresman and Company, 1948), Chapter 1.

teacher begins instruction on certain sound elements. Consonants such as *b*, *d*, *l*, *s*, and *p*, which do not vary in sound when they begin a word, are taught first. These are taught as the child encounters difficulty; obviously if a child knows the sound of the letter (and many bright children make this association for themselves) he does not need instruction on the sound. Instruction at the primer level also includes consonant blends (*bl*, *st*, for example) and double consonants that make a single consonant sound (*ch*, *sh*, *ng*). Structural analysis is continued along with this type of phonetic analysis.

Beyond the primer level various types of vowel elements are introduced. These include single-vowel letters (a as in "hat"), two-vowel letters (oo as in "good"), and diphthongs (ou as in "house"). At this stage, only one-syllable words are analyzed.

At higher levels of word analysis, the pupil learns to identify a syllable and to apply to each syllable in a word the phonetic skills learned at preceding levels. Additional phonetic skills are also taught—the variant pronunciations of vowels and how to tell whether a vowel sound is long or short.

From this brief overview of word-analysis skills, the reader can see that in order to attack a new word, the pupil must have more skills in his possession than mere knowledge of the sound a particular letter makes. This fact is not always understood by critics who urge the schools to return to an alphabet approach to teach reading. These critics would have the teacher first teach one of the sounds of the letter a, then the letter b, and so on through the rest of the alphabet.

Learning to read by the alphabet system is very difficult and when it was in vogue many children failed to learn to read. Consider the first letter to be taught—the letter a. It may have any one of four different sounds: ă, ā, â, ä. Eventually the child should be able to call each of these correctly as he meets them in such varied spellings as hăt, āte, dâre, and fäther. But the modern program of word analysis teaches the simplest, least variable sounds first, regardless of their alphabetical order, and proceeds step by careful step to more difficult levels. Such a program is psychologically more valid than one that introduces sound elements with no regard for their complexity.

Approaches to Beginning Instruction in Reading

There are a multitude of approaches to beginning instruction in reading. Five approaches that are currently used in school systems have been selected for brief treatment here: the basal-reader approach, the use of experience charts followed by the use of basal readers, the phonics approach used before or with basal materials, the language-experience approach, and the individualized-reading approach. A survey of approaches to formal reading instruction used in sixty-five school systems reported in 1963 that thirty-nine used a completely basal-reader approach, eighteen combined experience charts and basal-reading materials, six introduced a separate phonics program before or with

basal reading boods, one employed the language-experience approach, and one was totally committed to the individualized reading approach.[9]

THE BASAL-READER APPROACH   Although the emphasis varies from one series of basal readers to another, every series is intended to help the pupil build a reading vocabulary, develop an interest in books, increase his skill in word recognition, grasp the meaning of what he reads, and develop oral and silent reading skills. The beginning readers contain many pictures of children engaged in a variety of activities. The content is centered around the conversations of these children. Pupils look at the pictures, discuss them, and develop a basic sight vocabulary. This approach is frequently referred to as the "look-say" approach. New words are introduced gradually and repeated frequently to encourage mastery at sight; the conversations among the children in the pictures, somewhat limited at first, are broadened to include a wider range of topics. Pupils are taught to recognize the sounds of letters, combinations of letters, and whole words, but instruction is not limited to these devices. As Gates has stated, "The aim is to give the pupil a kit of many tools, not just one, with which to deal with all types of word recognition problems that he will encounter." [10] Austin and Morrison have identified the role of basal readers as follows:

> When properly used, the basal readers serve a springboard from a skills-development program to reading books in the classroom, school, or public library for pleasure and information.[11]

EXPERIENCE CHARTS   The use of experience charts is founded on the principle that the child's first reading experiences should be based on his own actual experiences. Before books are introduced, pupils are encouraged to relate interesting experiences they have had, the teacher records the "stories" on the chalkboard or a chart, and pupils read the stories to recognize words, phrases, and sentences. Later these stories are transferred from the chalkboard or chart to a booklet that is kept on the library table in the classroom. These experience charts may be planned so that they contain the basic sight words that are found in the preprimers.

THE PHONICS APPROACH   Many varieties of the phonics approach are in use in schools today. Indeed, Heilman has stated that "there are no non-phonetic methods in use in America today." [12] A comparison of the phonics program presented in the basal readers with that presented by one of the lead-

[9] Mary C. Austin and Coleman Morrison, *The First R: The Harvard Report on Reading in Elementary Schools* (New York: The Macmillan Company, 1963), p. 21.

[10] Arthur I. Gates, "The Teaching of Reading—Objective Evidence versus Opinion," *Phi Delta Kappan*, February 1962, p. 200.

[11] Austin and Morrison, p. 22.

[12] Arthur W. Heilman, *Principles and Practices of Teaching Reading* (Columbus, Ohio: Charles E. Merrill Books, Inc., 1961), p. 241.

ing publishers of materials to be used in the separate phonics approach reveals that the principal differences lie in the timing of systematic instruction in phonics and in the amount of time devoted to it in the first grade. The separate phonics program requires the pupil to learn the sounds of letters and the rules that apply to reading before he learns words by sight; the basal-reader approach delays the study of these items until the second grade. Austin and Morrison report that one school system using the separate phonics approach called for the introduction of all twenty-six letters of the alphabet on the first day. The program in phonics included seventy phonograms, thirteen phonic rules, and twenty-six spelling rules—most of which were to be taught in the first grade.[13]

A detailed analysis of the content of the program using the separate-phonics approach is beyond the scope of this chapter. Several of the references listed at the close of this chapter supply this information.[14] Proponents of this approach generally advance the following arguments in its favor: (1) children can learn more in the area of phonics in the first grade than has been included in most of the basal-reader series, (2) learning the elements of phonics and generalizations gives children a tool that is useful in many reading situations, and (3) becoming independent in word recognition earlier eliminates the necessity for rigidly controlled vocabulary and constant repetition found in many basal-reader series.

THE LANGUAGE-EXPERIENCE APPROACH   This approach puts into practice what has been emphasized earlier in the text concerning the interrelationships among the various communication skills. Recognizing that the child's success in reading is influenced by his spoken vocabulary, the teacher encourages the pupils to express their thoughts orally, to paint, and to use other means of expression. Emphasis is placed on pupil-prepared reading materials. The approach, when used properly, can create a favorable attitude toward reading, help the pupil understand the relationships existing among the various communication skills, and foster creative expression.

THE INDIVIDUALIZED APPROACH   This approach has sometimes been called the "self-selection" approach. The pupils select from a variety of books available in the classroom the ones they want to read. The teacher has an individual conference with each pupil during which a check is made on word recognition, vocabulary development, comprehension, and other phases of growth in reading. A sharing time is arranged during which pupils share with other members of the class interesting items from the books they have read. Effective use of this approach requires teachers who are particularly competent in the fields of child development, children's literature and evaluation of pupil progress in reading. It involves a great deal of record keeping and skill in

[13] Austin and Morrison, pp. 24–25.
[14] See Heilman, pp. 234–236.

keeping other pupils at work while the teacher is conducting an individual conference.[15]

The Controversy in Reading

No aspect of the elementary school program has been the subject of more controversy in recent years than has the reading program. This controversy is understandable in view of the increasing recognition that learning to read is the fundamental activity on which the rest of the child's education depends. It is unfortunate, however, that the real issues have frequently been obscured by the introduction of political and religious issues, the overzealous promotion of commercial reading materials, and the gap between experimental studies and practice in the schools.

Much of the controversy has centered around the relative merits of the "look-say" approach used in most of the basal-reader series and the phonics approach to beginning reading. More specifically, the components of the controversy include (1) different interpretations of the meaning of reading—word calling versus broader objectives, (2) the use of one method versus the use of a combination of methods, (3) highly structured procedures versus more flexible ones, (4) when formal instruction in phonics should begin, (5) the strengths and weaknesses of the leading basal-reader series, and (6) the extent to which textbooks should constitute the reading program of pupils.

Gibson has made a contribution to the understanding of the sources of the controversy by reference to two cultures: "the pure scientists in the laboratory and the practical teachers ignorant of the progress that has been made in the theory of human learning and in methods of studying it." The unfortunate results of the split between these two cultures are summarized in the following statement:

> True, most children do learn to read. But some learn to read badly, so that school systems must provide remedial clinics; and a small proportion (but still a large number of future citizens) remain functional illiterates. The fashions which have led to classroom experiments, such as the "whole word" method, emphasis on context and pictures for "meaning," the "flash" method, "speed reading," revised alphabets, the "return" to "phonics," and so on, have done little to change the situation.[16]

The controversy in reading will remain on the superficial level until more progress is made in the psychological analysis of the reading process and until the results of this research are understood by teachers and parents. This research must be designed to reveal what it is that a skilled reader has learned, how the skill is learned, and how it can best be taught. The notion that read-

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[15] See Jeannette Veatch, *Individualizing Your Reading Program* (New York: G. P. Putnam's Sons, 1959).

[16] Eleanor J. Gibson, "Learning to Read," *Science*, May 21, 1965, p. 1066.

ing involves more than mere word calling has been emphasized earlier in this chapter. How much more it involves is indicated by the following statement:

> There are several ways of characterizing the behavior we call reading. It is receiving communication; it is making discriminative responses to graphic symbols; it is decoding graphic symbols to speech; it is getting meaning from the printed page.[17]

The effective teaching of reading depends upon an understanding of the structure of the language itself and an understanding of the psychological processes involved in learning to read. Fortunately, a beginning has been made in the systematic study of the reading process and the construction of a theory of instruction. It can be expected that much progress in this direction will be forthcoming.

The Reading Program in the Intermediate and Upper Grades

The reading program in the intermediate and upper grades provides opportunities for further developing those reading abilities emphasized in the primary grades and for using oral reading, work-type silent reading, and recreational silent reading. Some problems with which principals and teachers are concerned at these levels of the reading program are (1) building up adequate school and classroom libraries, (2) selecting and using basic readers, (3) developing a positive approach to the problem of comic books, and (4) making intelligent use of workbooks.

ORAL READING   The purposes of oral reading include (1) developing the ability to convey an author's meaning to others in an interesting manner, (2) serving as a means of self-expression for the child, and (3) providing a means of entertaining and informing the members of a group.

The following suggestions should be useful in improving the teaching of oral reading:

1. Provide a real audience situation for oral reading.
2. Teach the pupil to read a selection as if he were speaking it.
3. Teach pupils the importance of a pleasant voice, correct pronunciation, and rhythm in reading orally.
4. Select materials for oral reading carefully; both prose and poetry should be included.
5. Have the pupil practice reading the selection before presenting it to an audience.
6. Provide opportunities for pupils to dramatize stories, to recite poetry in unison, to announce numbers on a program, and to prepare radio programs.

WORK-TYPE SILENT READING   The purposes of the work-type silent reading program include (1) developing the ability to read in connection with

[17] *Ibid.*

various school subjects, (2) reading for problem solving, (3) developing the ability to use maps, charts, graphs, tables, indexes, tables of contents, dictionaries, and card files, and (4) developing the ability to take notes, to outline, to summarize, to skim, and to organize data.

The following suggestions should be useful in improving the teaching of work-type silent reading:

1. Provide opportunities for practicing the needed skills in meaningful situations rather than in isolated exercises.

2. Provide a wide variety of reading materials.

3. Stress the improvement of reading not only during periods set aside for that purpose but also in connection with the social studies, science, health, and other curriculum areas.

4. Help pupils learn when to master specific details and when to try to retain only the main ideas.

5. Help pupils learn to take notes, to give a report, to tell a story, and to follow directions.

6. Adjust the difficulty of material to individual differences in interests and abilities.

7. Help pupils learn to adjust reading speed to the material being read.

RECREATIONAL READING   The purposes of recreational reading are to help the child build an abiding interest in reading as a leisure activity, to stimulate him to read widely, and help him to enjoy reading materials of increasingly better quality.

The following suggestions should be useful in improving the teaching of recreational reading:

1. Provide a wide range of materials from the standpoint of difficulty, content, and type.

2. Maintain an informal classroom atmosphere; allow children to select materials within their own areas of interest.

3. Provide opportunities for the child to share with the group a selection he has enjoyed reading.

4. Read a part of a story and encourage children to complete it.

5. Encourage children to browse through books and magazines.

6. Encourage children to recommend books to the class by means of a talk, poster, or some other device.

Materials for Teaching Reading

BOOKS   The recent emphasis on excellence in education and the effort to secure more adequate financial support have led to a closer examination of the programs and facilities of the schools. One condition that has been revealed is a serious "book lag" in the schools. Data from the United States

Office of Education reveal that in 1965 69 percent of the nation's elementary schools had no libraries; total spending for elementary school books averaged little more than $6.00 per pupil (to provide an appropriate minimum of books per pupil would require a fourfold increase in spending); and elementary school teachers place more books and library facilities at the head of their list of urgent needs of the schools.[18]

LIBRARY FACILITIES The elementary school library plays an important role in the reading program. The *Harvard Report on Reading* recommended that (1) a central library be established in every elementary school, (2) at least the minimum number of books recommended by the American Library Association be provided, (3) each school should have a full-time certified teacher-librarian, and (4) books should be chosen by a selection committee headed by the teacher-librarian.[19] The central library should also serve as a materials center, containing pictures, films, resource units, curriculum guides, and other instructional resources. Although individual classrooms should have collections of books and other materials, the principal supply should be administered through a central library from which books and other materials can be sent where they can be used to best advantage and returned when they have served their purpose.

There is evidence that funds for the purchase of books and other instructional materials will be more adequate in the future than they have been in the past. The Elementary and Secondary Education Act of 1965 earmarked $100 million for schoolbooks and another $100 million for supplementary educational centers and services. Funds from state and local sources have been increasing also. The problem of providing a better quality of books, particularly basal textbook series, still deserves attention. Basal textbooks provide the core of the reading program in virtually all school systems. It is reasonable to expect that publishers will continue to modify these books as research provides evidence supporting a need for modifications. The basal textbook series of the future will, no doubt, exhibit a less rigidly controlled vocabulary, involve less repetition, present a more realistic picture of life in this century, and reflect less social class bias than do those currently used in the schools.

OTHER TYPES OF READING MATERIAL The staff of the elementary school should be familiar with the types of reading materials necessary for a modern reading program. In addition to foundation reading materials provided by the basic textbook series, the following types of materials are generally recommended:

1. In the primary grades, experience charts constructed especially for each group of children, rather than libraries of charts built up by previous classes;

[18] See Sylvia Porter, "Book Shortage Blot on Nation," Denver (Colorado) Post, August 22, 1965, p. 9.

[19] Austin and Morrison, p. 232.

2. Sets of supplementary books for group reading that are easier to read than the basic readers;

3. Sets of readers in the content fields, such as social-studies readers, science readers, and health readers;

4. Prose and poetry selections that the teacher can read to the class;

5. Single copies of children's literature—at least two copies per pupil—that can be read and understood by the members of the group;

6. Picture books for beginners and good stories for leisure-time reading —at least one copy per pupil;

7. Children's newspapers, pamphlets, and magazines;

8. Dictionaries of suitable difficulty for the pupils;

9. Children's encyclopedias for the intermediate- and upper-grade rooms;

10. Audio-visual resources, such as mounted pictures, film strips, sound films, exhibits, and specimens.

11. The SRA Reading Laboratory [20] provides a much-needed service for teachers of reading, particularly for those who attempt to individualize reading instruction. These materials are student-operated; the student corrects his exercises and charts his progress in comprehension, vocabulary, and reading rate in the student record book. The SRA Reading Laboratory provides fifteen selections at every difficulty level from the third grade through the twelfth.

THE PROBLEM OF COMIC BOOKS   Teachers and parents alike are concerned about the fact that comic books offer reading that seems to be fascinating to children. They want to know why children turn to comic books instead of other types of reading material, what harm may come from reading the comics, what types are most objectionable, and what can be done to improve the situation.

The alert elementary school principal will provide the opportunity for teachers and parents to make a cooperative study of the whole problem of comic books. Such a study will involve analyzing the content of various comic books, finding out how many comic books individual children read, determining the effect of various types of comic books on individual children, taking steps to see that children are provided with the better types of comic books, and making an effort to develop an appreciation for other types of reading material. Parents and teachers should have an opportunity to find out what juvenile-court judges, heads of institutions for juvenile delinquents, psychiatrists, and reading experts think about the influence of comic books on children; how children may be taught to evaluate comic books; and how other communities have developed cooperative programs for dealing with the problem.

The problem of comic books illustrates how conditions existing in our culture have a habit of coming to roost on the doorstep of the school. When

[20] Science Research Associates, Inc., Chicago, Illinois.

adults are generally too busy to read—when their ways of living and the substitutes for reading now in mass production destroy their desire for reading—it is understandable that children also turn readily for learning and entertainment to comic books, the movies, and television rather than to reading. The comic books provide vicariously much of the action, adventure, and excitement that children crave. The pictures carry much of the story so that children have little reading to do in the process and the language that is used is usually the vernacular of the street.

The professional literature dealing with reading and other language arts, as well as magazines for laymen contain an increasing number of articles on the comic book. Suggestions found in the recent literature on the problem have significant implications for the reading program in elementary schools. Some of the more important conclusions are as follows:

1. Many juvenile-court judges believe that excessive reading of crime comics induces crime.

2. Those who have had extensive experience in dealing with delinquent children observe that if a child is well balanced and living under normal conditions, he will probably be unharmed by the comics; if he has a tendency toward delinquency, the crime comics will help him on his way.

3. A child who likes the comics will frequently spend too much of his time reading them and neglect to read other books or to spend sufficient time outdoors.

4. Many comic books are printed on cheap paper, have art work of poor quality, and strain the child's eyes.

5. The comics provide an unwholesome release for feelings of aggression and frustration for many children.

6. Many comic books glamorize unwholesome phases of life and exert a powerful adverse influence upon the minds of children.

7. The comics tend to make children impatient with good literature.

8. Crime comics constitute a large portion of the total number of comic books; not more than 10 percent deal with the classics, Bible stories, science, and social studies.

9. Dealing effectively with the problem of comic books requires the cooperation of teachers, parents and community organizations.

THE USE OF WORKBOOKS   The use of workbooks in elementary schools has been increasing rapidly in recent years. Like textbooks, they may be used either as valuable resources for learning or as substitutes for good teaching. If workbooks are used merely to enable a teacher to keep a large group of children busy and quiet, their use should be discouraged. If, on the other hand, they provide a means to individualize instruction, help pupils learn to follow directions, provide practice on needed skills, and help pupils develop self-direction and independence, their use should be encouraged.

LISTENING

Listening is in some respects a more difficult process to master than reading. The child has no control over the rate at which he must listen; he does not have the page before him so that he can go back and re-examine ideas; and the language to which he listens is not always as well organized as that which he reads.

Teachers have always given a great deal of attention to teaching the child to read, but they are just beginning to realize that a carefully planned program for helping the child learn to listen effectively is also essential. In school, as well as in life outside the school, listening is one of the principal avenues for learning. When the child enters school, he has already had a considerable amount of experience in listening, but he must be taught to listen purposefully, accurately, and responsively. The situations in which the child needs to listen effectively begin with the kindergarten and increase in number and intensity as the child proceeds through the elementary school.

Listening is an integral part of the modern language-arts program. The kindergarten child learns to listen to directions given by the teacher, to stories that are read or told, and to music. Speech development requires careful listening if the child is to learn to pronounce words correctly. Growth in reading and spelling depends upon the ability to listen carefully and to identify sounds with words. Children must be good listeners to enjoy poetry fully, to participate in debates, panels, and forums, and to evaluate ideas presented by speakers.

Listening functions not only in the school but in family life, social life, and business as well. Life situations that require ability to listen include attending church, the movies, lectures, and concerts, listening to the radio, using the telephone, and engaging in conversation. What the individual derives from these and many other activities depends largely upon his ability to listen well, to evaluate, and to use what he has learned.

Several factors influence the effectiveness of listening. Hearing is as important for listening as seeing is for reading. If the hearing of the child is impaired, the teacher must see that school and community health services are utilized to remedy the defects, if that is possible, and alter classroom seating arrangements to place the child in the best position for hearing. Physical factors in the classroom environment such as temperature, noises from the street, or persons moving about in the room may hinder listening. The teacher should make every effort to provide a classroom environment that is conducive to effective listening.

Even if the child is free from hearing defects and the classroom is conducive to listening, a carefully planned program of instruction is necessary if the child is to learn to listen effectively. Listening is not a separate subject

to be added to the curriculum but a skill to be developed in relation to many aspects of the elementary school program. The school assembly programs, radio programs, oral reports, dramatization, recordings and transcriptions, musical programs, sound films, announcements, and discussion groups provide opportunities for developing good listening.

The following suggestions for developing more effective listening in elementary schools may be useful:

1. Make listening an integral part of the curriculum in the language arts, social studies, science, music, and other areas.

2. Provide a classroom environment that is conducive to good listening by attending to temperature, seating, and the elimination of noises.

3. Develop listening readiness by relating the material to previous experiences of pupils, teaching the meaning of new words needed, and stimulating questions.

4. Help pupils develop a purpose for listening, such as listening for enjoyment, to find answers to questions, or to find flaws in an argument.

5. Suit the material to the maturity level, attention span, and previous experiences of children.

6. Provide guidance for pupils in reproducing, summarizing, and explaining what they have heard.

7. Help pupils evaluate the programs to which they listen, to detect malicious propaganda, half-truths, and false claims.

8. Teach pupils the importance of courteous listening for effective group relationships.

9. Make radio listening a valuable part of the curriculum by selecting programs carefully, using programs to motivate regularly scheduled lessons, and planning follow-up activities.

10. Plan for school–home carry-over by encouraging children and parents to discuss and evaluate radio programs to which they listen.

HANDWRITING

Efforts to improve the legibility of cursive writing in schools began as early as 1850. Spencerian writing, muscular movement, and scales for measuring the quality of handwriting were offered as methods by which cursive writing could be improved. Normal schools of thirty and forty years ago offered courses in penmanship for prospective teachers and many of the graduates can be found in elementary schools today teaching penmanship as a separate subject period after period to successive groups of pupils. These teachers have mastered the intricacies of the "push and pull" exercises, the rows of single-spaced ovals, and the rows of double-spaced ovals. They view

with considerable alarm the introduction of manuscript writing in the primary grades.

Manuscript writing was introduced on a very limited scale in England early in the present century for the purpose of providing mothers with an easy method of teaching their children to write. Soon after Edward Johnston, in 1913, convinced a group of teachers that the system was superior to cursive writing, the movement began to spread in England. In 1922 Marjorie Wise, of England, taught a course in manuscript writing at Columbia University, and the Horace Mann and Lincoln Schools adopted the system. By 1929 more than 700 schools throughout the country were reported to be using this legible style of writing. In 1946 Freeman reported wide use of manuscript writing in grades one and two with only a few schools using it in grade three.[21] Reports from 470 schools showed that only 100 introduced it before 1935, and 370, or more than three fourths, have introduced it since that time. The rate at which schools adopted manuscript writing was somewhat higher from 1935 to 1940, but it has continued uniformly from 1941 to the present. If the present rate continues for a few more years, the use of manuscript writing in the first two grades will be almost universal.

The Place of Handwriting in the Program of the Elementary School

Handwriting in the modern elementary school is not an end in itself but a tool for communication and self-expression. It meets the need that pupils have for recording ideas, writing messages, signing their names, writing letters, and labeling objects. The school has the responsibility for helping children meet the ordinary demands of modern living by learning to write easily, legibly, and with sufficient speed to suit their purposes. A great deal of time has been wasted in the past in trying to bring all children up to a common standard of ornate penmanship by the use of daily drill on isolated elements. Most authorities now agree that more can be accomplished by developing a desire to write legibly as a matter of simple courtesy, using real situations for the purpose of teaching handwriting, and emphasizing good handwriting in all written work.

In teaching handwriting, as in other curriculum areas, most schools use practical middle-ground approaches. It is generally agreed that handwriting should grow out of the child's normal classroom activities, such as writing invitations, making labels, and preparing material for the class newsletter. This functional learning, however, may have to be supplemented with regular practice periods until sufficient progress has been made in developing skill in writing. Such periods should be brief and should be organized so that each child can work on his own writing difficulties.

[21] Frank N. Freeman, *Survey of Manuscript Writing in the Public Schools, Elementary School Journal*, March 1946, pp. 375–380.

Advantages of Manuscript Writing

Experience in public schools indicates that manuscript writing is suitable for the primary grades and that it may be continued in the upper grades for such purposes as making maps, charts, and graphs. The values claimed for manuscript writing include the following.

1. It is easier for the child to learn and provides a feeling of success early in the school experience of the child.
2. The child learns the same alphabet for writing that he learns for reading.
3. Strain and fatigue on the child's muscles are lessened by eliminating the long, joining strokes used in cursive writing.
4. Manuscript writing is easier to read and involves less eyestrain.
5. It can be used earlier as a tool in science, social studies, health, and other curriculum areas.
6. Children can attain as rapid a rate in manuscript as in cursive writing.
7. Manuscript writing helps the child in learning to read.

Suggestions for Teaching Handwriting

Courses of study and curriculum guides for elementary schools contain many suggestions for the teaching of handwriting. These suggestions may be summarized briefly as follows:

1. Manuscript writing is recommended for the first two grades at least.
2. The time for beginning cursive writing need not be the same for all pupils. Some may begin it in the third grade, while others may not make the transition until the fourth or fifth grade.
3. Manuscript writing may be used in all grades when it serves a definite purpose, such as making posters, programs, illustrated poems, and so on.
4. The child should be given freedom to develop individuality in his style of writing when satisfactory handwriting standards have been attained.
5. The ordinary work of the classroom should provide most of the practice in writing.

SPELLING

Spelling, like handwriting, is a tool used in communicating with others and as a means of self-expression. The ease and freedom with which the child engages in various forms of written expression of ideas depends upon his ability to spell. Correct spelling is important for the adult as a matter of common courtesy, as a social asset, and as a vocational tool. Instead of placing less emphasis on spelling, as is sometimes supposed, the modern schools provide many opportunities for learning to spell correctly not only during spelling

periods but throughout the day. Efforts are made to develop a consciousness of the need for spelling correctly, to promote self-direction on the part of the child in learning to spell, to provide situations in which children need to learn how to spell certain words, to teach the words children use most frequently in their written work, and to individualize spelling instruction.

A large proportion of the words an adult knows how to spell were learned through use in meaningful situations. The child learns to spell in many situations other than the formal spelling lesson. He learns from seeing words spelled correctly in books that he reads at home and at school; in stores and motion pictures on signboards and in newspapers. The modern school, therefore, provides for both the systematic teaching of spelling and for giving attention to spelling in connection with the whole school program.

Modern practices in the teaching of spelling reflect the influence of the newer psychology of learning, research dealing with words that children use in writing, and the trend toward unified teaching.

Principles of Learning Applied to the Teaching of Spelling

The concept of learning that emphasizes the modification of behavior rather than merely the acquisition of knowledge and skills is illustrated in the modern spelling program. How the child spells from day to day in various types of written work rather than the score he makes on a list of spelling words constitutes the proof of his learning. Learning through use in meaningful situations rather than through abstract drill is also emphasized.

In teaching the child to spell, the normal steps of learning are observed. The child has firsthand experience with an object in the environment, such as a ball. He hears the word "ball" used to refer to the object; he learns to say "ball"; he plays with the "ball"; he learns to read the word in a sentence; he learns to write it from a copy; and, last of all, he learns to spell the word from memory. The more meaning the word has for the child, the more easily he learns to spell it. All modern systems of teaching spelling utilize the sense of seeing, the sense of hearing, and the kinesthetic sense. Some children learn more readily by seeing the word in its context, some by hearing the word, and others by writing it, but all children learn best when spelling is associated with meaningful situations.

Children learn more readily when spelling is related to purposes that are real to them. By creating situations in which children need to spell in order to write something, by developing a consciousness of the need for correct spelling, and by helping pupils develop initiative and independence in learning how to spell new words, the teacher utilizes the powerful force of pupil purposes in the task of learning to spell.

No single list of words presented to the entire class regardless of interests and needs can meet the spelling needs of all members of the class. Teachers

who understand the nature and extent of individual differences realize that graded lists of words represent directional goals rather than uniform grade standards. Some children may already know how to spell most of the words in the list for a certain grade, whereas others may not be able to spell all of them by the end of the year. To expect a higher level of achievement than a child is ready for results in discouragement and dislike for spelling; failing to challenge a child to work at his full capacity is equally harmful. Children need help in setting up their own goals in spelling and in evaluating progress toward these goals. A proper regard for the needs of individual children will lead to individual instruction in spelling, which allows individuals and small groups within the class to progress as slowly or as rapidly as their ability and effort will permit.

In the modern school, the spelling program takes into account the level of maturity of the child. It is a waste of time and effort to teach children to spell words before they will need them in writing. Words needed in adult life are best learned at the time when need for them arises. If children are required to learn such words purely through drill, they will have forgotten how to spell most of them and will have to learn them over again when they are needed.

Research in Spelling

Research in spelling during the last half-century has indicated that learning to spell is largely an individual matter—few children conform to any one method of learning to spell words. Research also indicates that teachers should (1) select spelling lists from words commonly used, (2) give careful attention to individual learning problems, (3) create in the pupils an interest in and an appreciation for correct spelling, (4) give attention to spelling in all areas of the curriculum, and (5) use visual, auditory, and kinesthetic avenues to learning to spell.

Spelling in the Unified Learning Program

The unified learning program of the modern elementary school provides many opportunities for using spelling in meaningful situations. The program of experience units permits each child to learn to spell in the pursuit of genuine purposes. In these activities the child is able to see the need for spelling more clearly than in the formal period. This does not mean, however, that the spelling that is done in relation to other school work must constitute the whole program in spelling. Most authorities on the teaching of spelling recommend that from fifteen to twenty minutes daily be devoted to the direct teaching of spelling from the middle of the second grade on through the completion of elementary school.

ORAL AND WRITTEN LANGUAGE

The importance of the spoken and written word in influencing the social behavior of people, in improving human relations, and in living and working together is recognized more clearly than ever before. Modern world leaders have proved how powerful the spoken and written word may be in forming the minds of men and in promoting group action. The voices of the President of the United States and other leaders can be heard by millions of people; their speeches, interviews, and personal writings appear throughout the world. The spoken or written word can be a tool of power and grace if the idea is vital and it is presented attractively.

Oral and written language are important also from the standpoint of the growth and development of the child. Language plays an important part in helping the child understand the world around him, work and play effectively with others, and gain satisfaction through self-expression.

Much progress has been made in recent years in developing programs in oral and written language in terms of what is known about children. From the evidence we have it is clear that the key to language growth is enriched experience, that growth in language is a part of the child's general pattern of maturation, and that we should not ask a child to write or speak about things he does not understand. It is clear also that a child's speaking and writing are indications of his personal adjustment and that improvement in speaking and writing may depend more upon finding and removing the causes of frustration and conflict than upon extra drill.

Children of the elementary school age are normally keenly interested in language; the proof of this is found in the eagerness with which they pick up slang and other colorful expressions. They are interested in developing new skills which will give them status in the group and help them become persons in their own right. Developing skills and understanding in oral and written language can, therefore, be a joyous adventure both for the teacher and the pupils if the natural desire for learning is not destroyed by the use of uninteresting material or the formal, drill type of procedure.

Purposes of the Program in Oral and Written Language

The first step in improving the program in oral and written language is a clear understanding of the purposes of the program. The following purposes are mentioned frequently in courses of study and curriculum guides:

1. To provide an atmosphere that will encourage the child to speak and write freely about experiences in daily living;

2. To provide opportunities for cooperative group undertakings, personality development, and satisfaction in school work;

3. To encourage originality and variety of expression;

4. To develop the desire for a rich vocabulary to meet individual, vocational, and social needs;

5. To develop the habit of accurate observation, to make the child conscious of the richness of his experience, and to encourage him to express his ideas and emotions;

6. To help the child achieve increasing mastery of the mechanics of writing, such as sentence structure, the use of capital letters, punctuation, and spelling.

Suggestions for Improving Oral and Written Language Instruction

Modern courses of study and curriculum guides for elementary schools contain many suggestions for enriching the oral and written language experiences of children. The following suggestions are among those commonly listed:

1. Growth in language is fostered by a classroom environment that permits face-to-face relationships, provides stimulating materials, and maintains a relaxed, informal atmosphere.

2. Rows of seats screwed to the floor, rigid time schedules, and artificial learning activities centering around drill are detrimental to language development.

3. The teacher who has faith in children and knows how to enlist their cooperation can do a great deal to improve the learning environment in any type of classroom.

4. In the primary grades the amount of time given to oral expression should be greater than that given to the written expression.

5. The personality of the child, the influence of the language of his home, and the child's need for security and satisfaction are taken into account in the oral and written language program.

6. Conversation, choral speaking, dramatization, and creative writing are emphasized along with the more formal procedures for developing language skills.

7. The time needed for drill on mechanics is lessened by providing frequent opportunities for use in meaningful situations. What drill is needed is provided in close connection with significant speaking and writing situations.

8. Remedial work in usage is based upon a record of the child's own usage errors.

9. Opportunities are provided for individual and group evaluation of progress under the guidance of the teacher. Instead of coming after a unit has been completed, evaluation of progress goes on continuously as an integral part of the teaching-learning process.

Forms of Oral and Written Expression Recommended for Elementary Schools

An examination of curriculum guides for elementary schools indicates that the following forms of oral and written expression are emphasized:

Oral Expression	*Written Expression*
1. Informal conversation	1. Letter writing
2. Purposeful discussion	2. Record keeping
3. Messages, announcements, and reports	3. Preparing reports and diaries
4. Dramatic play	4. Creative writing (prose and poetry)
5. Choral speech	5. The mechanics of writing, such as sentence structure, punctuation, capitalization, and the like
6. Observance of social amenities	6. Writing experience stories
7. Story telling, jokes, and riddles	7. Writing labels, signs, and posters
8. Giving and following directions	8. Filling in forms
9. Club meetings	9. Giving directions and explanations
10. Using the telephone	10. Writing reviews and summaries
	11. Taking notes and making outlines

The importance of oral expression cannot be overemphasized. It has been estimated that the average individual talks at least 100 times for every time he reads or writes. Moreover, when the teacher helps the child build acceptable speech patterns, he is helping him to increase his power to read and write. Many excellent publications are available to help the teacher utilize opportunities for oral expression that exist throughout the school day in connection with school subjects and activities.[22]

In classrooms where there is a rich program of learning activities, it is rarely necessary for the teacher to set up artificial situations to encourage lan-

[22] Two very useful sources are: Matilda Bailey, et al., *Language Learnings* (New York: American Book Company, 1956); and Bureau of Elementary Education, *Teachers Guide to Education in Later Childhood* (Sacramento, Calif.: California State Department of Education, 1957), Chapter 11.

guage expression. As children study about their social and physical world, they learn things they can share with another class, with the whole school in a school assembly, or with their parents at a parents program. To prepare for the program, they must read for information and write reports; they must engage in class discussions to plan the program; there are invitations to write and permissions to secure. Finally, there is the program itself, and the presentation of reports or stories to the audience. Activities such as these are in contrast to the language class where children are assigned to write a composition on how electricity travels or life in a feudal community.

Among the artificial situations set up to promote oral language development, many primary teachers include in their daily schedule time for "show-and-tell." Children are encouraged to bring in an interesting object from home, to show it to the class, and to tell about it. When a child has something worthwhile to show and tell, he should indeed be encouraged to do so. The child who finds a cocoon, an interesting shell, or a picture relating to what is being studied should share his find with the class. But it is questionable whether such a period should be regularly scheduled in the daily program. As a part of every school day "show-and-tell" too often degenerates into a period where children will display objects of no interest to anyone, including themselves, just for the sake of having a turn. Meanwhile the captive audience is enjoined by the teacher to sit still and listen politely.

Language-arts activities rarely need to be planned solely to give children practice in speaking or writing. Activities such as creative writing and dramatics foster creative expression as well as language practice. Announcements, directions, and class discussions fill a practical value by communicating needed information. When the school day is full of significant learning activities, language is needed to carry them out. And when either oral or written language serves a legitimate purpose recognized by the class, children are more easily motivated to improve their language expression.

This is not to say that all children's needs in oral and written expression can be taken care of in connection with other subjects. A separate period is needed for remedial work, for vocabulary building, for direct instruction on how to write a sentence or a paragraph, for help on how to express oneself more clearly, forcefully, correctly, and creatively. But in the modern language program, such instruction is related to and grows out of the child's language needs in other areas; these skills are not taught as ends in themselves.

Dramatic Activities in the Language-Arts Program

Dramatic activities that have valuable contributions to make to the language-arts program include dramatic play, dramatization, work with puppets, pageants, pantomime, and tableaux.

Dramatic play centers around social experience; the child identifies himself completely with the character he portrays. He does not act a part as in

dramatization; rather, he *is* the person or thing he represents. This is a favorite activity of children before they reach school age when they engage in playing house, playing school, or playing train. After they start school they gradually become acquainted with a wider range of experiences and learn to carry on dramatic play with a larger group of children under the direction of a teacher who knows how to use techniques that make the activity profitable and enjoyable. Dramatic play is useful for pure enjoyment, for helping pupils grow emotionally, for revealing incorrect concepts, for developing good conversation, and for providing an opportunity for learning related to the natural and social environment. If the teacher really understands young children, dramatic play will never be used for putting on a show, but simply to provide an opportunity for the children to do something that is interesting and worthwhile for themselves. As they begin to feel themselves a part of the school, children may want to do something for another class or grade.

In general, dramatic play is most suitable for young children and decreases in effectiveness as children grow older. Certain types of equipment are essential for making the most effective use of dramatic play. Dolls, toy trains, toy airplanes, blocks of various sizes, and materials for improvising costumes are useful in providing experiences relating to familiar phases of everyday life.

Dramatization of familiar stories and poems may begin in the primary grades, but it is particularly useful at the nine-year-old level and beyond. Because it is more formal than dramatic play, its usefulness increases as the usefulness of dramatic play decreases. Dramatization is not imposed upon children by the teacher; rather, stories are dramatized because children like them. The teacher provides guidance for the children in planning and evaluating but does not dominate the situation. The pupils are free to interpret the spirit of the story as they understand it and are not forced to reproduce the exact language of the story.

A great deal of planning and organization takes place before the actual dramatization of a story. The teacher sees to it that all children participate rather than just a few of the most gifted ones. The steps involved in dramatizing a story include reading and discussing the story, deciding whether the story lends itself to dramatization, listing characters, selecting equipment, selecting pupils to play the various parts, discussing the personalities of the characters in the story, preparing to dramatize the story by getting better acquainted with the action and conversation of the characters, dramatizing the story, making individual and group evaluations, and re-playing the story.

Puppet and shadow plays provide an effective means of teaching appreciation of literature, constitute a release for tensions of the inhibited child, and enable the timid child to express himself more freely because he is separated from the audience by a screen. Hand puppets made from clothespins,

wooden jump figures manipulated by strings, shadow puppets made from cardboard mounted on sticks, stuffed puppets, and marionettes controlled by strings are types that can be used successfully by elementary school children.

Pageants, pantomimes, and tableaux are other types of dramatics that are adapted to use in elementary schools. They provide enjoyable experiences for children, foster creative expression, and develop an appreciation of literature and history.

LITERATURE FOR CHILDREN

Books written especially for children are available in greater quantity and better quality than ever before. Many public libraries are well stocked with books appropriate for children of the elementary school age; the better elementary schools have central libraries and classroom libraries containing children's books selected from approved lists; and teachers are working with parents in the selection of appropriate books for home reading. There is evidence, however, that many teachers and parents fail to take full advantage of these resources for helping children acquire a love for reading. One survey indicates that only one adult out of every ten visits a public library regularly.[23]

Good books make many contributions to the enrichment of living. They cannot serve as substitutes for direct firsthand experience, but they can add greatly to the richness of living for both children and adults. Well-written books for children provide a means of gaining information, of extending experience, and of relieving tensions. They can help the child see his personal problems in their perspective, develop sensitivity to the ways of living of people of other lands, and enrich leisure living. The use of reading for the purpose of developing better socioemotional adjustment is receiving an increasing amount of study.[24]

Teachers generally recognize the importance of meeting the emotional needs of children, and books of the right kind do much to develop stable, well-adjusted individuals. The feelings of security, of achievement, and of being accepted by the group are fostered when children enter vicariously into the experiences of their book friends. Books help children develop an appreciation for moral and spiritual values, satisfy the desire for beauty, and provide an avenue of escape from time to time from the monotony and routine of daily living. Teachers must be alert, however, to discover children who

[23] Robert D. Leigh, *The Public Library in the United States* (New York: Columbia University Press, 1950), pp. 32–33.

[24] See Hilda Taba, *Reading Ladders for Human Relations* (Washington, D.C.: American Council on Education, 1947); and Association for Childhood Education, *Helping Children Solve Their Problems* (Washington, D.C.: The Association, 1950). See also William S. Gray, *Promoting Personal and Social Development through Reading* (Chicago: University of Chicago Press, 1947).

have a tendency to spend too much time in the dream world and lose their sense of reality.

If teachers are to make full use of the rich legacy that exists in the form of good books for children they must know hundreds of books in many fields, their strengths and weaknesses, and they must also know a great deal about the interests and needs of the children for whom the books are intended. A book that the teacher or parent regards as a classic is not a good book for a particular child unless he can read and enjoy it. Scores of incidents illustrating the wide gap that exists between the teacher's appreciation of a book and what the child thinks of it can be drawn from actual classroom situations. One of the best illustrations is provided by the child who told the teacher, "This book tells more about penguins than I care to know."

The world of books can be made fascinating for children by the teacher who reads aloud to the group, displays pictures related to the material read, relates interesting facts about the author, and encourages children to read interesting books. The teacher begins at the level where the pupil is, selects books that are related to his background of experience, and works gradually toward the improvement of tastes in reading. The program in children's literature should be conducted in an informal manner so that children look forward to it as a pleasant experience.

The procedures used in teaching the child to read determine to a great extent the enjoyment he gets out of books. There can be little doubt that some teachers in their ardor for teaching the skills of reading overlook the effect of the process on the child's desire to read good books.[25] On the other hand, the teacher who is concerned with the effect the reading program has on the child's enjoyment of books looks for answers to the following questions: Does he turn naturally to books in his spare time? Is he eager to discuss the books he has read? Does he suggest that others read some of the books he has read? Does he express positive likes and dislikes for characters in books? Has he developed new interests through reading? Does he like to read?

Parents and teachers need help in evaluating books for children, for these, like books for adults, vary widely in quality. Informational books should contain significant and reliable content, have illustrations of high artistic quality, and be suitable for the age of the children who will use them. Story books should be ethically sound, well written, and full of action. Suggestions for evaluating books for children are available from many sources. One of the best sources, May Hill Arbuthnot's *Children and Books*, contains an excellent analysis of the basic needs of children that can be supplied through reading good books. It also points out the values to be derived from such types of literature as Mother Goose, ballads and story-poems, poetry, verse

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[25] See Lois Lenski, "What Are Books For, Anyway?" in Department of Elementary School Principals, *Elementary School Libraries Today*, Thirtieth Yearbook (Washington, D.C.: National Education Association, 1951), p. 271.

choirs, folk tales, fables and myths, historical fiction, animal stories, biography, and informational books.[26]

Experts in the various fields have prepared carefully culled lists of books for children. These lists may be found in publications such as the *Horn Book* magazine, *Wilson Library Bulletin*, the *Booklist*, *Children's Catalogue*, and Snow's *Basic Book Collection for Elementary Grades*. Courses of study and curriculum guides for elementary schools usually contain suggestions for the selection of books for various purposes, and the Association for Childhood Education International publishes lists of the best books to be purchased for seventy-five cents or less.

SECOND LANGUAGES IN THE ELEMENTARY SCHOOL

The introduction of second languages into the curriculum of elementary schools has been one of the most rapidly developing movements in elementary education in recent years. Data relating to the rapid growth of this movement are presented in Chapter 16. It is the purpose of this section to examine some of the reasons for teaching second languages in elementary schools, what languages should be taught, at what age children should begin the study of a second language, and some principles and techniques of teaching second languages to children.

Why Teach Second Languages in the Elementary School?

There is an urgent national need for citizens who can communicate in more than one language. The new role of our country in world affairs creates a need for linguists as well as engineers, scientists, and technicians. Our technological know-how is eagerly sought by people in many lands, but technical experts cannot work effectively unless they can communicate directly with the people they are attempting to help. Educators and laymen alike recognize that preserving democratic values in an increasingly interdependent world depends to a large extent upon removing language barriers.

Another reason for introducing a child to a second language lies in the fact that it enriches and adds interest to his entire program of studies.[27] Teachers have found that a study of a second language contributes to the achievement of the objectives of many of the areas included in the curriculum of a modern elementary school. For example, the study of a foreign language frequently stimulates a greater interest in vocabulary, literature, and dramatics on the part of children in the elementary school. The emphasis on international understanding in the modern social-studies program creates a need for understanding other peoples through a study of their language.

[26] May Hill Arbuthnot, *Children and Books* (second ed.; Chicago: Scott, Foresman and Company, 1957).

[27] See Theodore Andersson, *The Teaching of Foreign Languages in the Elementary School* (Boston: D. C. Heath and Company, 1953), p. 40–42.

Teachers have also found that the study of a second language lends variety and interest to arithmetic, science, and art in the elementary school.

Typical reasons given by 936 schools for offering a second language in the elementary school were as follows:

1. Promotes appreciation and understanding of other cultures and broadening world understanding;
2. Serves as a challenge for gifted children;
3. Is more easily learned in early years;
4. Ensures greater proficiency in foreign languages in high school;
5. Improves pupil's command of English;
6. Prepares for travel, work, and living outside the United States;
7. Is consistent with the trends of the times;
8. Creates more interest in other languages.[28]

What Second Language Should Be Taught?

The study cited above reports that 461 elementary schools offer Spanish, 322 offer French, 42 offer German, and 10 offer Japanese, Slavic, or Norwegian as a second language. The bases for selecting the particular language taught include availability of teachers, social and economic need, and cultural development. A leading authority on the teaching of foreign languages in the elementary school suggests that the local cultural situation should be taken into consideration when deciding what language to teach.[29] He calls attention to the fact that many international conferences are conducted in English and French, that the population of our neighbor, Canada, speaks French officially as well as English, that in New England and Louisiana there are many communities in which French is the native language of a majority of the population, and that French provides about one third of the stock of our English language. Consequently, French is selected as the second language to be taught in a large number of schools.

Because Spanish is spoken by some of our closest neighbors and by more than 2 million of our own citizens, elementary schools in the Southwest and West generally introduce Spanish as the second language. Like many other immigrant groups, the Germans have contributed notably to our national culture. It is understandable, therefore, that cities such as Baltimore, Cincinnati, Cleveland, Indianapolis, and Milwaukee, with heavy German populations, should select German as the second language.

At What Age Should Children Begin the Study of a Second Language?

The prevailing practice seems to be to introduce a second language at the third- or fourth-grade level. If a second language is introduced at all in

[28] Elizabeth Henson, "What about Teaching a Second Language to Elementary School Children?," *Childhood Education*, April 1958, pp. 367–70.
[29] Andersson, p. 25.

grades below the third, it is usually limited to a few phrases of greetings, a few songs, some common nouns, and counting to ten. Some reasons for introducing a second language at the third- or fourth-grade level include the following:

1. The child's interest in new sounds seems to be high at eight or nine years of age.

2. Children eight or nine years of age seem to have great ability to imitate sounds they hear.

3. By the third or fourth grade most children have become well oriented to school routine.

4. The printed page in his own language usually makes sense to the eight- or nine-year-old child.

5. By the fourth grade at least the content of the social-studies program usually deals to some extent with countries other than our own.[30]

What Are the Basic Principles Governing the Teaching of a Second Language in Elementary Schools?

The scope of this section prohibits a detailed discussion of methods of teaching a second language in elementary schools. Many of the accepted techniques are similar to those already presented in this chapter regarding the teaching of other phases of the language-arts program. Moreover, a number of books, pamphlets, and curriculum guides dealing specifically with this problem are available.[31]

Some basic principles that are emphasized by specialists on the teaching of second languages in elementary schools are as follows:

1. *The creation of suitable visual impressions is important.* Imitation plays an important part in the language-learning process. The whole behavior of the person speaking a second language is observed by the children. If the teacher is a native speaker of the language being taught, the children learn to imitate his total behavior. If the teacher is not a native speaker of the language, similar results can be achieved by inviting a native speaker into the classroom or by taking the class into an environment where the language is spoken. Another possibility is the use of sound films or television programs.

2. *The creation of a "climate of sound" is important.* Children are intrigued by the sounds of foreign words and learn to speak the language easily.

[30] See Margit W. MacRae, *Teaching Spanish in the Grades* (Boston: Houghton Mifflin Company, 1957), p. 21.

[31] See the following: *Spanish for Boys and Girls, Elementary Grades* (Santa Fe, N.M.: State Department of Education, 1955); *Modern Languages in a Modern Curriculum* (Madison, Wis.: State Department of Education, 1950); *Instructional Guide for Teaching Conversational Spanish in the Primary Grades* (Miami, Fla.: Dade County Public Schools, 1955); *Instructional Guide for Teaching Conversational Spanish in the Intermediate Grades* (Miami, Fla.: Dade County Public Schools, 1955).

If the teacher is a native speaker of the language, it is easy to create this new climate of sound. If the teacher is not a native speaker of the language, he must learn to imitate a native speaker and use recordings, radio, television, and resources persons to provide constant examples of how the language is spoken.

3. *Learning by doing is important in the language-learning process.* The love of action is universal with children. The teacher of a second language builds on this characteristic of children in many ways. Playing games, singing songs, dramatizing, and working with puppets are only a few of the possibilities for action.

4. *The second language should be integrated with other curriculum areas.* The social-studies program is rich in opportunities for creating an interest in a second language. How children in another country live, what their homes are like, what games they play, what songs they sing, what hobbies they have, and what holidays they celebrate are problems relating to both social studies and a second language. Art and music also provide many opportunities for relating language study to other aspects of the school program.

5. *Continuity is important in the learning of a second language.* The learning of a second language takes slow, patient, and cumulative experience. The program must begin early in the child's school experience and continue as long as he is in school if he is to acquire adequate knowledge of a second language. A carefully planned sequence of hearing, speaking, reading, and writing is also imperative if we are to avoid the mistake of the past in the matter of teaching second languages.

SUMMARY

1. It is by means of language that children can avail themselves of the cultural heritage and prepare for the intellectual and social cooperation involved in democratic living.

2. The primary purpose of the language arts is to promote the wholesome growth of the child by helping him to meet as effectively as possible those life situations involving the use of language.

3. Language expression is a form of social activity and must be taught in a free, informal social environment.

4. Research in relation to the language arts points to the need for enriching children's living through firsthand experiences.

5. There is a growing recognition that reading, listening, writing, and speaking are intimately related as the child learns to use language more effectively.

6. The purposes of reading in the elementary school have been expanded to include extending and enriching the experiences of the child, pro-

viding a means of self-realization, improving the use of leisure, promoting emotional stability, and preparing the child for intelligent living in a democratic society.

7. The scope of the reading program has been extended both vertically and horizontally.

8. Reading materials have been expanded to include not only basic readers but materials adapted to various levels of achievement, library books, periodicals, reference books, teacher-composed materials, news articles, timetables, and a wide variety of other materials.

9. The reading program needs continuous study, evaluation, and revision by the staff of the elementary school in order to keep it in line with modern principles of learning and the broader objectives of the modern elementary school.

10. Using reading-readiness tests and by means of systematic observation, the teacher must find out what children are physically, emotionally, mentally, and socially mature enough to read.

11. The most important item on the agenda of the first grade is helping the child to gain the background of experience that he needs for reading.

12. The better elementary schools are not going back to the old type of phonics teaching but are going forward to the development of techniques that are more in harmony with modern principles of child growth and development.

13. The reading program in modern elementary schools provides for reading readiness, beginning reading instruction, oral reading, work-type reading, and recreational reading.

14. The positive approach to the problem of comic books consists of analyzing the content of the comics, determining the influence of individual comics on individual children, providing better comics, and developing an appreciation of other types of reading materials.

15. Workbooks cannot substitute for good teaching. Personal contacts between teachers and pupils are essential if the learning experiences provided in school are to function in everyday living.

16. Children learn to listen more or less automatically but they must be taught to listen purposefully, accurately, critically, and responsively.

17. A great deal of time has been wasted in trying to bring all children up to a common standard or ornate penmanship by the use of daily drill on isolated elements.

18. More can be accomplished by (a) developing a desire to write legibly; (b) using real situations for the purpose of teaching handwriting; (c) emphasizing good handwriting in all written work; (d) discovering individual difficulties and correcting them; and (c) developing genuine purposes for writing.

19. The modern school provides for both the systematic teaching of spelling and for giving attention to spelling in connection with all written work done by pupils.

20. Developing skills and understandings in oral and written language can be a joyous adventure for both teacher and pupils if the natural desire for learning is not destroyed.

21. Education and laymen alike recognize that preserving democratic values in an increasingly interdependent world depends to a large degree upon removing language barriers.

22. A second language is more easily learned in early years than later.

23. French, Spanish, and German are the languages most frequently introduced in the elementary school as a second language.

24. The second language is usually introduced in the third or fourth grade.

25. The techniques of teaching a foreign language in the elementary school have elements in common with modern methods of teaching other language arts.

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Association for Supervision and Curriculum Development, *Improving Language Arts Instruction through Research*. Washington, D.C.: The Association, 1963. Summarizes research relating to the language arts since 1924.

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Heilman, Arthur W., *Principles and Practices of Teaching Reading*. Columbus, Ohio: Charles E. Merrill Books, Inc., 1961. An excellent college text that presents reading as a developmental process.

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National Council of Teachers of English, *Language Arts for Today's Children*. New York: Appleton-Century-Crofts, 1954. Practical suggestions for teaching the language arts.

Reading Teacher. The entire issue of December 1964 is devoted to the theme of linguistics and reading.

Smith, Nila Blanton, *Reading Instruction for Today's Children*. Englewood Cliffs, N.J.: Prentice-Hall, Inc., 1963. Chapter 15 presents changing concepts of beginning reading.

SELECTED FILMS

Alphabet in Teaching World Recognition. A twenty-four-minute sound film that shows a lesson as conducted by a first-grade teacher. Several activities are used to develop facility in recognizing words containing the short a sound, as in ax, in words by themselves and then in actual reading situations. (Iowa State University)

Build Your Vocabulary. A ten-minute sound film showing a functional approach to vocabulary building. (Coronet Films)

Choosing Books to Read. An eleven-minute sound film. Shows the value of books for different purposes, how interests are broadened through reading, and how the librarian can help in selecting books. (Coronet Films)

Making Sense with Sentences. An eleven-minute sound film showing why pupils should learn to make complete sentences, what a complete sentence is, and other factors involved in expressing thoughts. (Coronet Films)

News Times in First-Grade Reading. A twenty-two-minute sound film showing a news lesson in the first grade. Illustrates how the news period is used as a phase of the reading program and applied to other instructional areas. (Iowa State University)

Skippy and the Three R's. A twenty-nine-minute sound film giving an account of how children learn the three Rs naturally and easily. (Agra)

Spelling Is Easy. A ten-minute sound film showing five important steps in learning to spell a word correctly. (Coronet Films)

The Carpet under Every Classroom. A twenty-minute sound film showing ways a good library program helps to realize the objectives of the school. The library is presented as a resource center for pupils and teachers. (Precision Films)

Why Can't Jimmy Read? A fifteen-minute sound film. The story of nine-year-old Jimmy and his reading problems as a typical case history from the Syracuse University Reading Clinic. (Syracuse University)

Photo Comment

NEW APPROACHES TO TEACHING READING

For many years arguments over how beginning reading should be taught have centered on the issue of phonics. The debate has waxed furiously over whether pupils should first learn to sound out letter combinations to the exclusion of "look and say," or whether they should depend upon the sight approach with a very minimum of phonics training. Gradually this debate has subsided; the phonics evangelists have discovered that phonics is no panacea, and extremists in the whole-word approach have learned that children profit from some phonetic training, and that some children need it more than others. Both groups have moved toward a more center-of-the-road approach, so that today many teachers may begin instruction by building a sight vocabulary, and then early in the reading program initiate instruction in phonics.

This is not to say that there is any lack of proposals for teaching reading differently. One of the more recent innovations is based upon the Initial Teaching Alphabet (i/t/a), a forty-four-character alphabet developed by Sir James Pitman in England. As every teacher of beginning or remedial reading knows, reading problems arise out of the fact that the English alphabet contains many letters that have more than one sound. The i/t/a has a different character for each sound, thus eliminating that source of difficulty.

Reports on the use of i/t/a are generally enthusiastic—children make faster progress initially, and written composition flourishes since spelling is greatly simplified. Furthermore, it appears that transition to the regular alphabet is made without difficulty.

Some writers are of the opinion that i/t/a, or any approach to reading based upon a radically different alphabet and requiring an eventual transition to the conventional alphabet, will not last. Psychologists like Eleanor Gibson of Cornell University [see Science (1965), 148:1066] think that we will be closer to a solution to reading problems when research sheds light on the perceptual processes involved. We must know what kind of perceptual processing characterizes the skilled reader in order to plan training procedures. And just as analysis of the structure of math led to the "new math," analysis of perceptual processes involved in reading may lead to really new and workable reading programs.

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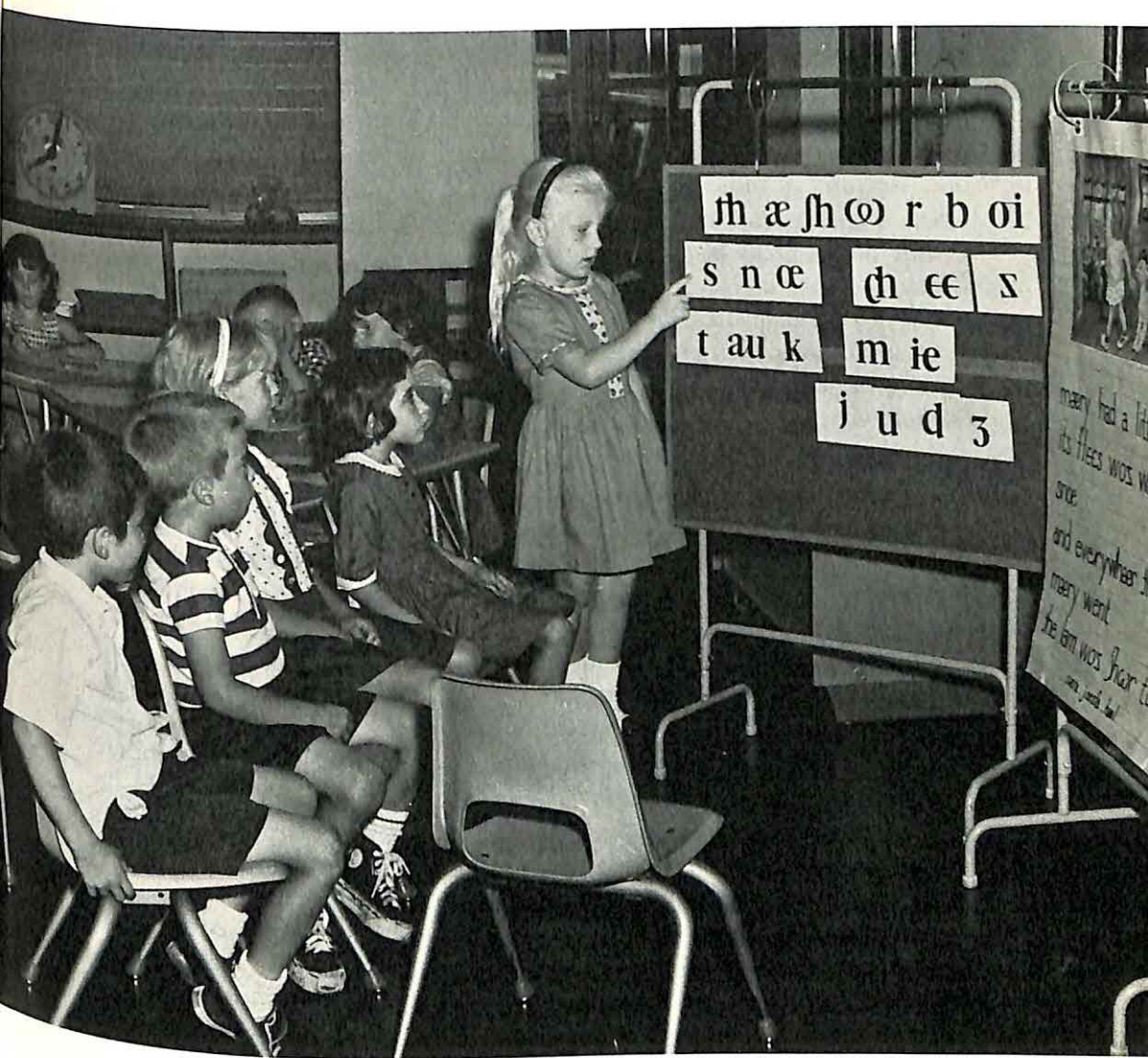
Problems and Projects

1. Teachers often note that, in the weekly test on Friday, some people get an almost perfect score if the teacher dictates the words in the order in which they appear in the text, but if he changes the order, the pupil combines letters to make nonsense syllables. Psychologists call such learning (for learning it is) "serial learning." In serial learning, the pupil learns the letters in order starting with the first letter in the lesson; each letter serves as a cue for the next one. Keeping in mind the four essentials of learning presented in Chapter 2, how might a teacher redirect the learning?

2. One of the goals of the language-arts program is to develop creativity in children. To that end, teachers sometimes assign a topic for written composition like "Paul Bunyon's Tall Tales," or "A Spooky Sight." Unfortunately, the results are far less than creative. In place of the deft touch and subtle surprise, the compositions are merely bizarre.

To help develop creativity in children, Crutchfield and Covington present a story problem and then ask the children to solve it. In one story, for example, a jewel mysteriously disappears from a locked room. A device the investigators use to foster creativity is to provide feedback by having two children in the story offer suggestions for solutions. These serve as standards for the subjects. The suggestions range in creativity; some are only moderately creative so that a child will not be discouraged by too high standards.

Teachers can use the same feedback device to foster creativity in children's writing. A small beginning might be made by giving the class a suggested first line which they are to use in writing a poem. Several models can then be presented, including one of superior quality. The first line of Robert Frost's "Departmental" which begins, "An ant on the table cloth" could be used in a fifth-grade class. Compose a poem that might be read to the class as a kind of intermediate standard between the pupil's own effort and Frost's.

3. Examine one of the preprimers in a basal reading series from the standpoint of linguistics. Begin by listing the vowels a, e, i, o, u. After each, write the words containing the vowel that you find in the first ten pages of the preprimer. Analyze the sound each vowel makes in the word in which you find it. Which letters are used to make more than one sound? How would you make use of your findings in teaching children to read?

4. Prospective teachers take courses in literature and composition that give them some criteria against which to judge children's compositions. Suppose a fourth-grade class was writing compositions much like the one below. Write your diagnosis of its shortcomings and plan teaching procedures to improve written expression.

THE COCOON

We had a cocoon in our room. Bobby found it on a tree. We kept it in a jar. One day the cocoon split open. A moth came out. The moth was yellow with brown spots. We found a picture of the moth in an encyclopedia and the name was cecropia.

5. Children in the intermediate grades are taught the kind of reading that college students must do in carrying out their assignments. The skills involved in this work-type reading differ in certain ways from those that are used in recreational reading. Here are some of the skills:

   a. Learning to use the index,
   b. Reading to get the main ideas in a chapter,
   c. Reading for details,
   d. Outlining,
   e. Summarizing,
   f. Learning to adjust reading rate to the purpose for which one is reading.

Describe some practice exercises that a fifth-grade teacher might use to help children acquire these skills.
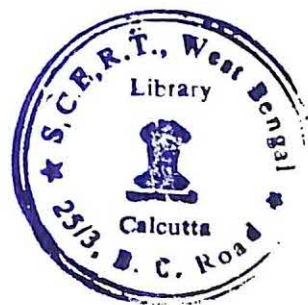
Living Together:
The Social Studies

10

The American people have always expected the schools to contribute directly to the development of loyalty to the democratic ideal, good citizenship, civic responsibility, and human relationships. These represent the broader goals of all education, but the social studies have historically assumed a special responsibility toward the attainment of those goals.
—John Jarolimek, *Social Studies in Elementary Education* (second ed.; New York: The Macmillan Company, 1963), p. 2.

The idea is frequently expressed that the future of civilization revolves around the question of whether man can learn to live with his fellow man. There is abundant evidence that the future of this nation depends not only upon our achievements in science but upon our knowledge and skill in the realm of human relations. A high degree of social competence is required in diplomacy, foreign trade, labor-management relations, intercultural relations, the conservation of natural and human resources, the reduction of crime and delinquency, the administration of public enterprises, and education.

Although no one expects children in the elementary school to provide solutions for complex national and international problems, almost everyone agrees that the elementary school has a responsibility for introducing the child to society and its problems. How far to go in the process, how to organize the program, and what methods and materials to use are central problems in curriculum planning.

The social-studies program in the elementary school cannot take sole responsibility for the social education of children, but it can play an important part in their social growth and provide them with insight into the structures and processes through which people live, work, and play together. It can help

them to understand our economic system, our form of government, the history of our nation, the differences and similarities of peoples around the world, the contributions that citizens make to the welfare of the community, and the rights and duties of citizens in a democracy. The content of the modern social-studies program is drawn from a wide variety of sources; organization and methods harmonize with what we know about learners and the learning process. Without losing sight of the value of acquiring useful information, the program helps each child to grow continuously in the abilities needed for effective participation in the life of a free society.

THE MEANING OF SOCIAL STUDIES

The term "social studies" came into general use in comparatively recent years. The National Education Association gave it official sanction in 1916, and the teachers of social subjects selected the name *National Council for the Social Studies* for their new organization in 1921. The term is now generally used to designate that phase of the curriculum in elementary and high schools that deals with the relations of human beings to one another and to their environment.

The social studies and the social sciences both deal with human relationships, the former at the level of childhood and adolescence and the latter at the level of the adult. The social scientist is concerned primarily with expanding the boundaries of knowledge and with developing highly specialized scholars in such fields as history, geography, political science, economics, sociology, and anthropology. The social studies are concerned with the wide dissemination of information, the development of social skills, and the improvement of social behavior. The social-studies program draws materials from the various social sciences, but it also uses materials from the local community that cannot be properly classified as belonging exclusively to any of them. The social-studies program in the modern elementary school does not place major emphasis on the mastery of logically organized bodies of subject matter; it emphasizes the functional use of subject matter from many sources to increase social literacy and develop socially desirable behavior.

The improvement of social behavior as a concern of the social studies has been misinterpreted by some critics of education. They define social behavior rather narrowly in terms of social amenities—the "pleases" and the "thank-yous," sharing equipment, taking turns in a group discussion, and in general learning to act toward others in civilized fashion—and ridicule the school for making these part of the curriculum. But the social amenities are only a small part of socially desirable behavior as defined by educators. Socially desirable behavior in a democracy would include many things such as exercising one's right to vote; seeing that constitutional rights as defined by the courts are accorded to all regardless of race, creed, or color; working

for community improvement; working for better schools; jealously guarding our freedoms under the Bill of Rights; recognizing America's responsibilities toward other nations; recognizing that the future of America is inextricably bound up with that of other parts of the world. In its social-studies program the modern school attempts to teach pupils the concepts, skills, and attitudes that will lead to behaviors consistent with our democratic ideals.

In order to help children develop such desirable social behaviors the teacher does not necessarily plan a unit or a special activity. But these behaviors are goals the teacher continually has in mind when he teaches. Whether the study is centered on South America, Medieval Europe, a current events problem or a playground squabble, concepts stemming from our democratic faith are introduced, and generalizations that will guide children toward democratic behaviors are taught to them.

The term "social education" is frequently found in educational writing. The term is not used as a substitute for the social studies but as a general term to include all phases of the environment that influence the development of social maturity in children. It includes not only the social-studies program of the chool but the work of other educative agencies, such as the home, the community, the press, radio, motion pictures, and television, which influence the social insight and behavior of children.

Social living, sometimes used to designate those phases of the school program in which the child participates in group activities, includes not only the organized social-studies program but also such activities as the core program, experience units, assembly programs, and school clubs.

OBJECTIVES OF THE SOCIAL STUDIES

The ultimate objectives of the social-studies program is the improvement of living, not merely in the classroom, but in the community, the nation and the world; it is designed to develop intelligent, responsible, self-directing citizens. The school, therefore, not only provides opportunities for the child to acquire useful information; it also provides a laboratory for social living in which he has opportunities to develop his own potentialities and to contribute his maximum effort to the improvement of group living.

It is the responsibility of the staff of a local school system to formulate the objectives of the social-studies program. The staff will find it useful to review statements of goals of the American way of life, the general purposes of education in American democracy, principles of child growth and development, and statements of social-studies objectives developed by national professional organizations and by other school systems. However, no ready-made statement of objectives should be accepted by the staff without revision, additions, and adaptation to local conditions. The statement that follows illustrates the understandings, skills, and attitudes and appreciations listed in many curriculum guides as objectives of the social-studies program. The

illustrations that follow the objectives are, of coure, not inclusive; they will be expanded and made more explicit as professional educators and subject-matter specialists identify understandings, skills, and attitudes and apprecia-tions that are significant in the education of children for intelligent citizenship.

Understandings

The social-studies program is designed to give a better understanding of:

1. Movements, events, and personalities that have influenced the history of the United States—the Westward movement, the abolitionist movement, the women-suffrage movement, industrialization and urbanization, involve-ment in world affairs, government concern for the economic welfare of indi-viduals; the Declaration of Independence, the War for Independence, the writing of the Constitution, the Civil War and reconstruction, World Wars I and II, the depression and the New Deal, the League of Nations, and the United Nations; Washington, Jefferson, Madison, Lincoln, the two Roose-velts, Wilson, Eisenhower, Kennedy, and Johnson; Horace Mann and the public school revival, Samuel Gompers, Carnegie, Ford, and many others.

2. The economic system—free enterprise, the profit motive, our affluent society, supply and demand, division of labor, advertising, insurance, unem-ployment, government regulation, labor unions and strikes, and many other features.

3. How geographic features influence our lives—rivers, lakes, natural re-sources, climate, ratio of area to population, and many others.

4. Current economic, social, and political problems—rate of economic growth, education and economic growth, minority groups, constructive use of new sources of energy, shortage of educated manpower, adjustment to the space age, and others.

5. Understanding other people of the world—common problems and needs, differences in customs, circumstances, and basic beliefs, differences in historical backgrounds and economic systems, and other likenesses and dif-ferences.

6. Interdependence of individuals and nations—changing status of the home, rapid transportation and communication, industrialization and urbani-zation, division of labor, and others.

7. The conservation of natural resources—increasing scarcity of certain resources, exploitation of natural resources, the demand made upon natural resources for military and civilian production, and other aspects of the problem.

Skills

The social studies program should assist pupils in developing skills for:

1. The detection of harmful propaganda—the use of half-truths, using statements out of context, extravagant claims for products, reliance on innu-endo and emotionalized appeals, and other forms.

2. Using technical vocabulary—legislative, executive, judicial, continent, judicial, continent, nation, municipality, citizenship, suffrage, referendum, laissez faire, and other terms.

3. Locating information—textbooks, reference books, encyclopedias, magazines, World Almanac, and so on.

4. Using maps, globes, and charts—seeing relationships, using scales and legends, using longitude to calculate time, making maps and charts, and other skills.

5. Reading social-studies materials—getting the main ideas, skimming, using index and table of contents, using the library, and other reading skills.

6. Working effectively with others—getting acquainted, learning about special abilities of classmates, developing leadership ability, and other social skills.

Attitudes and Appreciations

The social-studies program is designed to assist pupils in developing favorable attitudes toward and appreciation of:

1. Basic American beliefs—the worth of the individual, equality of opportunity, the private-enterprise economy, freedom to teach and to learn, the free press, freedom of religious beliefs, the consent of the governed, and other democratic principles.

2. Our American heritage—men who fought in wars, served in public office, struggled for a free press; statesmen, teachers, scientists, ministers, diplomats, and others.

3. Honest differences of opinion—religion in the schools, the United Nations, states rights, federal aid to education, government regulation of economic life, and other issues.

4. People who differ from us—other races, religions, and economic systems; differences in language, customs, and dress, and other differences.

5. The American school system—free, compulsory, tax-supported, state-controlled, universal, nonsectarian; its contribution to freedom and economic well-being.

PLANNING FOR THE SOCIAL STUDIES

The field of human relationships is so vast, so complex, and so dynamic that the task of selecting content and organizing it for teaching purposes in elementary schools requires intelligent, continuous planning at the national, state, and local school levels. The President's Commission on National Goals recognized this need as follows: "As much as any subject in the curriculum, social studies needs a fundamental re-examination. In view of the rapid development of the social sciences in recent years, school courses in the subject

should be thoroughly reappraised, standards of teacher preparation and quality of texts should be raised." [1]

Planning at the National Level

The elementary school in this country is an agency of state governments; each state is free to set up its own requirements regarding the subjects to be taught. The states have generally delegated much of the authority to plan the curriculum to school districts, and these districts have, in turn, given teachers a great deal of freedom in the selection of learning experiences for pupils. Recent concern for the future of our way of life in a troubled world has, however, caused serious questions to be raised concerning our decentralized system of curriculum planning. "Can a curriculum conceived primarily by the state board and the local school district and administered typically by the individual teacher provide adequate foundations for the nation's strength and welfare?" [2] Since the imposition of a national curriculum design by federal fiat is contrary to American traditions, the alternative seems to be efforts by nonpolitical, voluntary agencies to reach agreements as to what understandings, skills, and appreciations should be the common possessions of all American children and youth. The pressure to use the schools as instruments for national survival and the trend toward more centralization of curriculum planning will be discussed in greater detail in Chapter 16. It is sufficient at this point to present a brief summary of planning for the social-studies program as it operates at the national, state, and local school levels.

Social-studies projects at the national level have been much smaller in scope than those in mathematics, science, and foreign language, primarily because funds from the federal government and from the foundations have not been available for projects dealing with the social-studies program to the extent that they have been for other fields. Nevertheless, several programs have been under way at the national level that should provide useful guidance for activity at the state and local levels.

The National Council for the Social Studies has for many years been providing excellent information concerning trends, programs, and practices in the social studies through its official journal, *Social Education*, and through its yearbooks.[3] A *Guide to Content in the Social Studies*, for example, presents a comprehensive outline of the scope of a social studies program for kindergarten through grade twelve, in terms of fourteen themes, as a guide for curriculum committees in local school systems. The geographical, histori-

[1] President's Commission on National Goals, *Goals for Americans* (Englewood Cliffs, N.J.: Prentice-Hall, Inc., 1960), p. 88.
[2] Paul R. Hanna, "Design for a National Curriculum," *Nation's Schools*, September 1958.
[3] See *Social Education of Young Children* (1956); *The Problems Approach and the Social Studies* (1960); and *A Guide to Content in the Social Studies* (1958) (Washington, D.C.: National Council for the Social Studies, National Education Association).

cal, political, economic, and social aspects of each theme are given attention at each grade level. The publication, therefore, offers an alternative to the familiar "ladder" system of grade placement in which history is taught at one grade level, geography at another, and civics at another. It provides instead for continuous growth of children in concepts and skills relating to the basic social-science disciplines.

Although the social-studies program has not shared in the funds provided by the federal government and the foundations to the extent that mathematics, science, and foreign language have, several projects have been initiated that should provide a great deal of help for curriculum-planning groups at the state and local levels. These projects include the Greater Cleveland Social Science Program for kindergarten through grade twelve, Project Social Studies, sponsored by the United States Office of Education, the Elkhart Indiana Experiment in Economic Education, the Curriculum Guide Committee of the National Council for Geographic Education, and Elementary Sequence in Behavioral Sciences sponsored by the American Council of Learned Societies and Educational Services, Inc.[4]

Scholars from the social sciences have joined with school personnel in these projects designed to improve instruction in the social studies. Attention has been given to developing concepts and main ideas drawn from the social-science disciplines, to teaching more content earlier, to methods of discovery and problem solving, to the development of basic skills needed for lifelong learning, and to learning to use the modes of inquiry employed in the social sciences.

Planning at the State Level

Teachers, principals, and curriculum directors need to be familiar with the reports, research, and recommendations coming from groups that are working at the state level. Most states have a voluntary organization called the Curriculum Improvement Commission or the State Curriculum Program, which works in close cooperation with the state department of education and with staff members from universities and colleges. In some states, the organization has both official sanction and financial support from the state legislature. These organizations generally provide materials for local curriculum-study programs, initiate experimental projects in local school systems, prepare and distribute publications, conduct workshops, and in other ways encourage statewide concern for curriculum improvement.[5]

[4] For more detailed information concerning these projects see Association for Supervision and Curriculum Development, *Using Current Curriculum Developments* (Washington, D.C.: The Association, 1963), Chapter 8.

[5] See Harold J. McNally and A. Harry Passow, *Improving the Quality of Public School Programs* (New York: Bureau of Publications, Teachers College, Columbia University, 1960), Chapter 5.

Planning at the Local School Level

Curriculum planning at the national and state levels does not eliminate the necessity for planning at the local school level. Social-studies programs in local school systems improve as school personnel work continuously at the tasks of defining the kind of program they would like to have, evaluating the current program, and making specific plans for improvement. Forming groups and facilitating their operations and the production of curriculum guides represent the typical pattern used in local school systems.[6] The work of committees is usually coordinated by a council on instruction or a steering committee representing the entire school system. Committees have rather specific assignments such as formulating objectives for the social-studies program, developing a scope and sequence chart, preparing resource units, making suggestions for evaluating pupil progress, recommending improvements in reporting to parents, and preparing a bulletin on the use of community resources. Several school systems have individuals or groups working on the actual writing of textual material for use by pupils.

ORGANIZING THE PROGRAM

The problem of developing the over-all framework or organization of learning experiences in the elementary school was discussed in Chapter 6. It was suggested there that many schools use the social studies as the core around which the unified program is organized.

The principal and his staff in an elementary school are confronted with the problem of developing the type of social-studies program which, in view of local conditions, will most effectively facilitate the achievement of the objectives of the school. The following basic principles should be useful in helping the staff develop a plan of organization:

1. The program should be based upon a cooperatively developed list of objectives.

2. The over-all framework of the program should be developed cooperatively by the school staff, parents, and resource persons who are specialists in the field.

3. The plan should afford the teacher the greatest possible freedom in selecting and developing, within the agreed-upon framework, learning experiences that meet the needs and interests of pupils in specific classroom situations.

4. The plan should facilitate the use of the local community as a laboratory for learning.

[6] See E. Merrit and H. Harap, *Trends in the Production of Curriculum Guides* (Nashville, Tenn.: George Peabody College for Teachers, 1955); and McNally and Passow, p. 81.

5. The scope of the program should be comprehensive and well balanced in terms of significant aspects of human relationships, and should provide for continuity of learning as the child grows and develops.

6. The plan should promote horizontal articulation; it should make it possible for the teacher to draw upon other curriculum areas, such as language arts, science, and the arts, for materials and activities.

7. The plan should promote vertical articulation; experiences in any grade should be related to what has already been studied and to what is to follow.

8. The plan should be flexible and subject to continuous revision in terms of new developments in education and changes in conditions of living.

Two general plans of organization are used by elementary schools: the separate-subjects type, and the unified program. In the separate-subjects type, the pupil attends one class in history, another in geography, and sometimes another in civics; frequently the classes are taught by different teachers. The unified program takes many forms, ranging all the way from a fusion of history, geography, and civics to an integrated type of program operating on the basis of problems and using materials not only from the social studies but from literature, art, music, science, and other curriculum areas.

The opinions of specialists, as well as current practice, seem to favor the unified program over the separate-subjects type of organization, at least in grades one, two, and three. Fraser reports studies of existing patterns of organization as follows:

1. A study completed in 1953 showed that fusion and integrative types of organization were employed by 91 percent of 113 city school systems in grades one and two and by 88 percent of 118 city systems in grade three.

2. The same study found that 41.73 percent of the city school systems employed the separate-subjects type of organization in grade six.

3. Data from this study and from similar studies involving teachers, state departments of education, and elementary supervisors, indicate that the social studies are taught in the primary grades through a fusion or integrative type of organization, that the separate-subjects type of organization is used to a greater extent in the intermediate grades, but that a majority of the schools employ some degree of fusion or integration in organizing the social-studies program for the intermediate grades.[7] A survey of trends in all fifty states made in 1963 revealed that in only two of the states were plans being made to go back to the separate-subjects organization.[8]

[7] Dorothy M. Frazer, "The Organization of the Elementary-School Social-Studies Curriculum," in *Social Studies in the Elementary School* (Chicago: National Society for the Study of Education, 1957), pp. 129–162.

[8] John D. McAulay, "What the States Are Doing: Elementary Social Studies," *Pennsylvania News and Views*, March 1964, p. 3.

PLANNING THE SEQUENCE OF EXPERIENCES

State, county, and city school systems prepare curriculum guides that present, along with other suggestions, a suggested scope and sequence for social-studies experiences. The scope and sequence chart is designed to prevent undue duplication, to provide proper balance in the program, and to assist in the selection of instructional materials. Efforts are made to relate learning experiences to the maturity of children at various levels, to capitalize on conditions and resources of the community, and to promote the development of democratic behavior. The sequence of experiences usually moves from the child's immediate environment toward places, events, and people farther removed in time and space. Thus, home, school, and the local community are emphasized in the kindergarten and the first and second grades, other communities in the third grade, the state in the fourth grade, the United States in the fifth grade, and other countries in the sixth grade.

A number of recent studies have shown, however, that the development of a scope and sequence chart does not necessarily solve the problem of selecting appropriate learning experiences for the child. Children in the primary grades, for example, have been found to know a great deal already about the aspects of the community they are expected to study.[9] On the other hand, the state capital may be as far away as the Amazon in terms of the experience of the fourth-grade child. The influence of mass media of communication, vacation trips, and the mobility of population make it difficult to set up a hard-and-fast rule concerning what should be taught at various grade levels. However, these influences are not sufficiently powerful to make it desirable to eliminate efforts to develop an over-all framework for the social-studies program. Rather, they point to the need for flexibility in implementing the over-all design; for careful study of a particular group of children in order to understand their previous experience, their out-of-school learning, and the material they have already studied; and for cooperative planning by the school staff to prevent undue duplication and to foster readiness for information and skills that come later in the child's experience. Some schools organize the social-studies program in such a manner as to include a combination of specific-purpose activities, such as carrying out a drive for the Junior Red Cross; a center of interest such as transportation, communication, or housing; and the study of a topic in an organized fashion.[10] The crucial factor is not the articulation of bits of content as such; rather, it is the articulation of content with children's experience. The scope and sequence chart does not guar-

[9] John D. McAulay, "What's Wrong with the Social Studies," *Social Education*, December 1952, pp. 377–78.

[10] See *Opening Doors: A Social Studies Bulletin* (Wilmington, Del.: Wilmington Public Schools, 1954), pp. 15–16.

antee continuity in the learning experiences of children; rather, it makes it easier for the teacher to create such continuity.

EFFECTIVE TEACHING PROCEDURES

Formulating objectives, developing an over-all framework or organization, and planning the sequence of learning experiences are some of the means by which the staff of an elementary school can provide a favorable situation for teaching the social studies. The quality of the program is determined, in the final analysis, by the procedures used to make the social studies functional and meaningful for children.

The social studies offer many opportunities for rich and meaningful experiences. The extent to which these opportunities are utilized depends to some extent upon the size of the classroom, the type of furniture in the room, the amount and kind of instructional material available, and the type of curriculum organization used in the school. It depends to a much greater extent upon the vision of the teacher, his understanding of the characteristics and needs of children, and his resourcefulness in adapting methods and materials to the needs of individuals.

Curriculum planning in the social studies no longer consists merely of the selection of content to be covered. A unit on Latin-American neighbors, for example, should suggest content to be studied, such as deserts, mountains, rivers, lakes, groups of people, modes of transportation, education, occupations, and products, but it should contain a great deal more than an outline of content to be covered. Various approaches for stimulating interest in the unit should be described; activities should be suggested that involve the language arts, health, history, geography, science, construction, art, and music and rhythms; suggestions should be made for evaluating pupil progress; and lists of films, film strips, still pictures, books, and periodicals related to the unit should be provided.

If elementary school children regard the social studies as dull and uninteresting, the cause can usually be found in one or more of the following conditions:

1. The children are studying history or geography as separate subjects based on a single textbook. For example, one teacher of a fourth-grade group reported that the children had no interest in the social studies. It was found that the program consisted entirely of reading and reciting from a book about far distant lands.

2. The material in the book is too difficult for the children to understand and deals with concepts, places, and events far removed from their past experiences.

3. The children are forced to memorize isolated facts rather than engage in activities that are meaningful at their level of development.

4. The teacher conceives his task to be merely that of passing along information rather than increasing social literacy, and improving social behavior.

Major Characteristics of Effective Teaching Procedures

There is no simple formula for effective teaching of the social studies in elementary schools. The teacher who understands the principles of child growth and development, the realities and ideals of contemporary American life, and the broader objectives of the elementary school has the foundation upon which to develop teaching procedures adapted to the situation in which he is teaching. These bases of good teaching have been discussed in Chapters 2, 3, and 4. Chapter 7 contains suggestions for developing teaching procedures in harmony with them. Though by no means inclusive, the following topics will call attention to some of the major characteristics of effective teaching in the area of the social studies.

PARTICIPATION IN MANY MEANINGFUL ACTIVITIES   Reading the textbook and reciting the contents to the teacher once constituted virtually the only experience the child had in the social-studies program. In recent years, however, the number and variety of learning activities have increased greatly. It is assumed that if children are to become more effective in meeting social situations they must participate in many meaningful activities involving human relationships. Merely reading about various methods of voting is not enough; voting must become functional in the lives of children if they are to become intelligent citizens. Democratic citizenship develops in a classroom in which children practice living as citizens of a democracy.

It is recognized, of course, that the activity program can be carried to undesirable extremes. Activities are not ends in themselves; they are means to learning, just as subject matter is a means to learning. It should not be assumed that just any activity has educational value. Teachers spend a great deal of time in selecting and guiding activities so that they will contribute to the development of useful concepts, attitudes, and behavior traits. Unless this is done, the activity program can be much worse than the traditional program based on a single textbook. In fact, one of the pitfalls that the modern teacher must avoid is activity for activity's sake. Teachers have sponsored activities of little or no real educational value and have justified them "because the children are so interested" or because "they provide such wonderful opportunities for working in groups."

Here are samples of activities carried on at different grade levels in elementary schools:

First grade: The children put on a health play for their parents, taken from a magazine for teachers. They memorize their lines, make little costumes out of brown wrapping paper, and learn a song entitled "Making Our Teeth White and Strong." The hero of the play is Mr. Toothbrush, who finally drives old Mr. Cavity right off the stage in a hilarious climax.

Second grade: Children build a little post office for the distribution of valentines. They bring in boxes to form a counter and build a stamp window. They cover the boxes with brown paper, paint a background and even erect a roof. They plan and carry out the whole activity in committees. Each child has a box in the post office marked with his name. The children take turns playing clerk and putting the valentines in the proper place.

Third grade: The community health officer comes to school by invitation to talk to the class about the various ways in which his office safeguards the health of the community. The class plans for his visit, writes him a letter of invitation and a thank-you letter. No posters are made; no art work is involved.

Fourth grade: Children model an Eskimo village on the sand table. They make pipestem figures dressed as Eskimos, build igloos, arrange dog sleds and other equipment.

Sixth grade: Children stage an original play, "The Trial of Peter Zenger," growing out of their study of our basic freedoms. They write the script after studying various records of the trial, plan the scenery and the costumes, and plan other aspects of the production.

A critical analysis of these activities will enable the reader to develop some criteria for evaluating activities. Putting on a health play for parents can be a very worthwhile educational activity. But there are a number of criticisms that can be made of this first-grade activity. In the first place, there is little to be gained from having children memorize a play written by someone else; when they create their own, they must use the concepts they have acquired, thus providing for review and also a check for the teacher on the accuracy of the children's information. In the second place, songs about the teeth probably belong in the same category as singing commercials; teeth, toothpaste, soap, and tobacco are not the kinds of subjects that normally inspire one to song. In the third place, the study of health is really a *scientific* subject of inquiry, and the scientist frowns upon anthropomorphisms. Referring to the toothbrush and cavity as if they had human qualities detracts from the scientific aspects of tooth care. And, actually, it perpetuates a misconception. Brushing the teeth does not *rid* the teeth of cavities; it helps to prevent their formation.

The post-office activity actually has little educational value. It bears little relationship to what goes on in a real post office. But an additional criticism could be made, namely, that a good deal of pupil time is spent on construction work of a dubious nature. Activities ought to help children acquire concepts; presumably the post-office unit was planned to help children acquire concepts relating to the functioning of our postal system. But rigging up a "building" with cardboard cartons and brown paper does not help children acquire the desired concepts, and time spent on such an activity can hardly be justified.

Assuming that the children have been adequately prepared, an activity

involving a visit from the health officer can add considerably to the third grade's knowledge of what must be done to protect community health. If the children are well motivated there is no need to add sugar-coating in the form of posters or pictures. When the children are involved in solving problems that are real to them, such sugar-coating only detracts from more purposeful activities.

The Eskimo activity has little, if any, educational value. The children are carrying on an activity based upon factual information that is out of date; the modern Eskimo no longer lives the kind of primitive life the children are picturing. Furthermore, since the pupils do not have actual materials available, the makeshift igloos, sleds, and costumes will bear little relationship to reality and may actually create erroneous concepts in the children's minds. Activities that truly reproduce the experience of another time or place (such as candle making in a pioneer unit) will help the child better understand other ways of living, but imitations of reality, and too often imitations based upon erroneous information, are a waste of teacher and pupil time.

The sixth-grade children in their play production are involved in an activity that is both creative and informative. They are having an opportunity to do research on an important topic and, in so doing, to further their knowledge of one of our basic freedoms—freedom of the press. The writing and staging of the play are highly creative activities, which also give them a chance to use what they have learned in their reading. Provided the children are held to high standards of accuracy in content and in staging, and that the product is the children's, not the teacher's, this activity can stimulate intellectual and creative growth.

These examples of the unprofitable use of activities do not alter the fact that pupil's in the modern social-studies program learn from many varied activities rather than merely from reading the textbook; the described activities merely emphasize the fact that unit teaching, in which multiple activities are used, requires intelligent planning. Effective use of unit teaching (see Chapter 7) requires intelligent formulation of objectives in terms of understandings, skills, and appreciations; intelligent planning of activities for the realization of these objectives; and comprehensive evaluation of pupil progress. Indeed, these three dimensions have been called "the dynamic cycle of education. . . . One dimension is the goals established. The second is the means selected for achieving the goals. The third is evaluation." [11] Careful listing of objectives and careful planning for evaluation are, of course, futile unless activities are also carefully selected and executed.

Curriculum guides provided for teachers and resource units developed by groups of teachers or students preparing to teach are available in the library or materials center of colleges engaged in the preparation of teachers.

[11] See George A. Beauchamp, *Basic Dimensions of Elementary Method* (second ed.; Boston: Allyn and Bacon, Inc., 1965), pp. 30–31.

Some of these will illustrate a close relationship among objectives, activities, and evaluation procedures; others will reveal an amazing lack of relationship. A resource unit for the intermediate level of an elementary school dealing with the topic "Africa: Land of Contrasts" can be used here to illustrate a desirable relationship among objectives, activities, and evaluation. Only a few items under each heading are needed to illustrate the desirable relationship.

AFRICA: LAND OF CONTRASTS

Objective	*Activity*	*Evaluation*
1. To make pupils aware of the rapid changes that have been taking place in Africa;	1. Have pupils locate on a map the countries in Africa that have gained their independence since 1950;	1. True-false test item: The Congo has gained its independence since 1950;
2. To develop a vocabulary needed in reading about Africa;	2. Have the class develop a glossary consisting of such terms as oasis, nomad, Pygmy, fetish, Boer, Berber, Sphinx, Bushman, ergs, and so on;	2. Multiple-choice test item: A green, fertile place in the desert where water is found is called (1) an oasis (2) a nomad (3) a fetish (4) a Berber;
3. To develop skill in the use of maps;	3. Have pupils use a recent map of Africa to locate important places and physical features;	3. Have pupils locate on an outline map: Nile River, Sahara Desert, Suez Canal, Egypt, Johannesburg, and so on;
4. To help pupils understand the importance of Africa's resources and products;	4. Have groups of pupils study and report to the class on Africa's minerals, water power, plant products, forests, ivory, fish, cattle, and sheep;	4. True-false test items such as: Africa provides 97 percent of the world's diamonds;
5. To help pupils develop an appreciation for people who differ from ourselves in color, religion, dress, and customs;	5. Have a Peace Corps worker or a missionary who has just returned from Africa report to the class on religious beliefs, customs, homes, dress, and so on. Have a pupil report to class on why the native African's skin is dark;	5. Informal evaluation procedures to determine the extent to which pupils are learning to appreciate people who differ from themselves in color, ways of living, and so on;
6. To help pupils develop skills for group living.	6. Have pupils participate in formulating objectives, planning activities, and evaluating outcomes of the unit.	6. Have individuals tell what they learned from the unit in terms of skills for group living. Have the class discuss ways in which the work on the unit could have been more productive.

MANY TYPES OF INSTRUCTIONAL MATERIALS   Since the emphasis of the modern social-studies program is on living and understanding life in the world today, instructional materials include people, institutions, objects, and events

as well as books and other verbal materials. Experiences with the actual social processes that make up group life in the total culture are to be found in the modern classroom, but the media for learning are not confined entirely to those available in the school. In contrast to the limited opportunity for learning provided by a single textbook, the child learns from many interesting books; from maps, charts, globes, and models; from using tools and art media; from visiting places in the local environment; and from audio-visual resources such as motion pictures, film strips, radio, and television.

Books nevertheless constitute an important source of learning in the social studies. Modern textbooks encourage the development of meaningful concepts by providing a less crowded page, by using larger and better pictures, and by gearing the content and illustrations to the maturity level of the child. In addition to textbooks, many interesting books, pamphlets, and periodicals of various levels of difficulty play a part in the social-studies program.

The unit procedures used in most elementary schools require a classroom library supplied with a wide variety of materials that pupils may use to investigate and attack their individual and group problems. A children's encyclopedia; several different social-studies readers in sets of six or eight; children's books presenting pertinent factual materials; and similar sets of books that can be purchased at low costs, exemplify instructional materials needed in the modern social-studies program.[12] Pictures, charts, maps, pamphlets, and samples of products can be obtained from many large commercial organizations if state laws and local school regulations permit the use of such materials.[13] In some school systems, curriculum materials are prepared by local teachers. In Kansas City, Missouri, two teachers were released from classroom duties for a period of time to prepare materials entitled *The Story of Kansas City*, to be used in the several levels of the school system.

Many elementary schools have their own motion-picture project; others borrow a machine from the office of the county superintendent. Films can usually be obtained from the visual-education department of the state university, from the office of the state superintendent, or from the state health department.

In most communities, many valuable instructional materials and resources are available at little or no cost. In one school system, the teachers made a survey of all of the possible places that might be visited by classes. In other communities, children visit a session of court to observe procedures used in a trial; visit the office of the mayor, the police department, and the fire department; and make surveys, with the help of the health department, of the causes and prevention of communicable diseases. Residents who have visited

[12] Social Studies Readers are published as a part of the Curriculum Foundation Program by Scott, Foresman and Company.

[13] See J. G. Fowlkes, *Elementary Teacher's Guide to Free Curriculum Materials* (Randolph, Wis.: Educators Progress Service, published annually).

other countries are invited to talk to the class; local industries and occupations are studied; and children participate in community-improvement programs.

LEARNING TO ASSUME RESPONSIBILITY   The need for children to learn to assume responsibility as rapidly as possible has been recognized for many years. The work of the classroom, as well as the problems of group living that children face daily in the school, provides many opportunities for children to plan, assume responsibility, and work together. Among the numerous opportunities for worthwhile socializing experiences are the following:

1. Developing objectives of a unit of work;
2. Selecting committees for various phases of the unit;
3. Planning activities, such as trips and work periods;
4. Developing procedures for effective group work;
5. Taking care of equipment—tools, paint brushes, and playground toys;
6. Making the classroom more attractive;
7. Making a school flower garden;
8. Serving as librarian;
9. Participating in community drives;
10. Planning and arranging bulletin boards;
11. Making plans for improving the school lunchroom;
12. Raising and lowering the school flag;
13. Planning and conducting assembly programs;
14. Caring for plants and animals in the classroom;
15. Supervising the parking of bicycles;
16. Developing a safety code;
17. Evaluating behavior and seeking to improve it.

The unit of work provides many opportunities for individuals and groups to assume responsibilities and develop leadership abilities. The pupils have a part in deciding what they shall learn and in planning their work. They have a wide variety of lifelike experiences, find many outlets for self-expression, and participate in the evaluation of progress toward the objectives they have set up.

COMPREHENSIVE, CONTINUOUS, AND COOPERATIVE EVALUATION OF PUPIL PROGRESS   For effective direction of the social-studies program, for accomplishing the goals of the program, and for discharging the responsibilities of the school to the community, an adequate program of evaluation is necessary. Evaluation of pupil progress consists in determining what is happening to boys and girls as a result of social-studies experiences.

Many teachers consider evaluation to be synonymous with written examinations. From this point of view, pupil progress in the social studies can be evaluated merely by means of written tests. These examinations are useful in measuring the amount of information pupils have acquired and for revealing certain verbal reactions of pupils, but the social-studies program is not

concerned with verbal reactions alone. As a result of social-studies experiences, the pupil is expected to develop interests in social events, habits of working cooperatively with others, attitudes favorable to social improvement, habits of critical thinking, and a command of useful information and skills. The program of evaluation is inadequate if it does not provide evidence of pupil progress in each of these aspects of growth. Some of the means by which this can be done are discussed in Chapter 15.

An adequate program of evaluation is carried on as a continuous process rather than being limited to specific periods just before report cards are given out. Evaluation is an integral part of the teaching-learning process rather than something that takes place after teaching has been completed.

Since there can be no evaluation until the objectives have been clearly defined, the first prerequisite in developing a program of continuous evaluation of pupil progress is a clear understanding of the major objectives of the social studies. For example, if the teacher understands clearly that one of the major objectives is to help the child develop responsibility, he is in a position to look for such specific evidence as the following:

1. Does the child participate in the selection of problems?
2. Does he stay with a task until it is finished?
3. Does he work well with others?
4. Does he follow group plans and decisions?
5. Does he help others when they need help?
6. Does he seek help when he needs it?
7. Is he resourceful in finding and organizing information?
8. Does he take his share of the responsibility for care of the room and the proper care of materials?

An adequate program of evaluation is carried on as a cooperative enterprise. Parents, teachers, and pupils are all concerned with the development of objectives, the planning of activities, and the selection of appropriate instruments and procedures for evaluating progress. Parents need to understand clearly what the program is intended to do for children; teachers need to provide leadership and expert knowledge and skill; and pupils need to participate actively in the program in order to become intelligent, self-directing citizens.

THE USE OF CURRENT SOCIAL PROBLEMS

The social-studies program, in a period of ever-accelerating change, is undergoing change in direction of giving more attention to the great social, political, and economic problems which face our people. Programs in many elementary schools provide opportunities for pupils to study problems relating to family living, conservation, economic education, and world affairs.

Social-studies programs almost universally make provisions for studying

home life in the primary grades. Typical problems and activities include getting along with members of the family, enjoying family life, sharing home responsibilities, getting along with other children, keeping well, playing safely, finding satisfaction in work done at home, conducting relationships with adult acquaintances and strangers, reading books about homes and families, and developing interests and hobbies that carry over to the home.

Education for Family Life

The first school was the home, and the first teacher was the mother. As the state has assumed more responsibility for the education of children, the gap between the home and the school has widened. In recent years such movements as parent-teacher associations and child-study programs have caused educators to plan school activities with the values and needs of home life in mind and have led teachers and parents to become partners in curriculum making. Educators and laymen alike are realizing that strengthening family life will help solve many economic and social problems and provide a better basis for national defense against unsound ideologies.

A number of books deal exclusively with family-life education—the need for it, the educational principles and practices used, and the specific school activities relating to the problem.[14] Worthy home membership was one of the "seven cardinal principles" of education published by the commission of the National Education Association in 1918, and the 1938 list of purposes of education published by the Educational Policies Commission included appreciation of the home, conservation of the home, homemaking, and democracy in the home.[15]

Education for worthy home membership begins in the kindergarten or first grade. To see how this purpose of education is translated into action, we turn to some generalizations growing out of a study of home and family life, planned for the primary grades.

Generalizations Growing Out of a Study of Home and Family Life [16]

1. *The composition of a family group differs from household to household.* Teacher A in Grosvenor School began work in the area of home and family life with a group discussion, remarking on the pictures the children had drawn, which were now hanging in the room and which illustrated various members of their households. She commented on the fact that their

[14] See Bess Goodykoontz and Beulah I. Coon, *Family Living and Our Schools* (New York: Appleton-Century-Crofts, 1941); and American Association of School Administrators, *Education for Family Life* (Washington, D.C.: National Education Association, 1941).

[15] Education Policies Commission, *The Purposes of Education in American Democracy* (Washington, D.C.: National Education Association, 1938).

[16] From *Intergroup Education in Kindergarten and Primary Grades* (1953), by Celia B. Stendler and William E. Martin. Reprinted by permission of The Macmillan Company.

families differed in many ways and asked the children to find some of the differences in the pictures.

> DAVE: Tony's grandfather lives with him.
> SANDRA: My uncles live with me.
> TOM: Patsy's mother's dead and she has a grandmother.
> POSIE: I got six brothers and sisters and Martha don't have none.

Other differences were mentioned, and in each case the teacher, by her matter-of-fact way of handling differences, helped children to accept various types of family membership. The group had previously agreed that the pictures they had drawn would become part of a class book on family life. To sum up the discussion, the teacher asked the children what they might say in the book to explain the pictures. The children finally agreed on the following text:

> Our families are all different.
> Some families are big and some are little.
> Some families have fathers and mothers and some just one and some none.
> Some families have different relations living with them.
> We have all got someone to take care of us.

2. *The composition of a family group does not necessarily determine the happiness of the family.* Teacher A was not content to let the discussion rest with recognition of differences in family composition. She went on to pose the far more difficult question with her first graders, "Which kind of family is best?" The children answered with the characteristic braggadocio of six-year-olds, "Mine! Mine's best." Then the teacher encouraged each child to tell the things he liked best about members of his family. From there the group was prompted to discuss the things they did not like, and the discussion was summarized in the children's language, "Who lives with you doesn't matter so much. It's what they're like."

Miss A did not want to give her children the impression that being from a broken home, being an only child, or having to share cramped quarters with too many relatives was the most desirable pattern of family living. But what she hoped to accomplish was to help her children see that differences in composition of families do exist, that these differences must be faced by children from families that are different as well as families that are more "normal" for our culture, and that these differences need not jeopardize the happiness of family members if they are accepted and dealt with intelligently.

3. *The kinds of houses people live in vary considerably; some are very comfortable houses and some are very poor, even dangerous to live in. People cannot always live in the kind of house they prefer.* This generalization is especially needed in schools attended by children from different social classes.

By first grade, children in such schools are conscious of differences in housing and, unless they are taught differently, tend to associate poor living conditions with "badness." Thus, the person who lives in a "shacky" house (as they call it) is also a person who does not do the things that are "right."

The teacher may find that the opportunity to teach this generalization comes about in connection with other learnings. Miss X, for example, took her class on a trip to see a new housing project under construction. On the way, the bus passed through the Negro section of town. The children asked, "Why are all the people black?" "Why are the houses so shacky?"

Back in the classroom, the teacher brought up these same questions, and an interesting discussion followed. During it, the teacher brought out the following points:

> The people we saw were colored, but not black. We call them colored or Negro people. It is only in things like their skin color and hair that they are different from you. Some white people do not know this. They think Negroes are not as good as whites because they look different from whites. They pass laws which make Negroes live in only one part of town.
>
> Most of the houses in which the Negroes live are owned by white people.
>
> Some white people are trying to make better laws for the Negroes. In some housing projects whites and Negroes live together. (She shows pictures.)
>
> We cannot judge people by the kind of houses in which they live.
>
> Because of the housing shortage, people live in many makeshift houses, including trailers.

4. *Patterns of family living vary considerably from family to family.* This very broad generalization can be developed to include who works in the family, what kinds of work they do, the different churches they attend, the rules and regulations they set up for family members, dnd the customs within each family. As with the other generalizations, the teacher begins first with a statement acknowledging differences in the group. She may start in this fashion:

"We've been finding out many ways in which families are alike and many ways in which they are different. They may differ, too, in who works in the family and in the kind of work they do. Let's see if we can find out what some of these differences are."

The area of work gives the teacher a very good opportunity to help children see that both fathers and mothers can work outside the home, that many, many different kinds of jobs are necessary in our modern world, and that some jobs require special competence and special training. She may also use this opportunity to help children become acquainted with different kinds of workers. One first-grade class undertook to find out how many different

kinds of workmen it took to build a house. In the course of their study, they invited an electrician, a bricklayer, an architect, and a plastering contractor to the classroom to talk about their jobs. Because the plastering contractor was a Negro, the children had the experience of getting to know a worker from a different race as well.

In the area of work, the teacher will experience greater difficulty in finding stories that are true to real life. Too many of the readers include glamorous descriptions of the milkman and the fireman which give young children an erroneous impression of these occupations. Too few readers include the industrialized worker, the miner, the unskilled laborer, and the social-service worker. Teachers may want to supplement this thin fare by having children make their own picture books of work done by their parents or of work necessary to a specific enterprise, such as running a school or building a house. As children arrive at generalizations from their class discussions, they can dictate these to the teacher to form the text of their book.

Conservation Education

The responsibility of the public school for helping to check the exploitation of the nation's natural resources illustrates the theme that has been emphasized throughout this book: problems of living with which our people are confronted must be taken into account in curriculum planning. The need for conservation of natural resources was discussed in Chapter 3. It was pointed out there that the public school has an important role in providing information, attitudes, and habits that will make conservation a way of living.

The effort to use the powers of the federal government to conserve our natural resources began in earnest during the administration of President Theodore Roosevelt and has continued to the present. During the last two decades many state legislatures have enacted laws requiring that conservation be taught in the elementary schools; curriculum bulletins have contained suggestions for including conservation materials in the scince program and in the social studies; and state, national, and private organizations interested in the problem have published descriptions of what schools in the various sections of the country are doing.[17]

Units on conservation of the soil, forests, minerals, wildlife, water, and human resources are found both in our science and the social-studies parts of many elementary school programs. Emphasis on conservation is found in other units relating to the home, the school, the community, the state, and the nation.

[17] See the following references: *Conservation Education in Oklahoma Schools* (Oklahoma City, Okla.: State Department of Education, 1945); *Teaching Conservation in Elementary Schools* (Washington, D.C.: Federal Security Agency, U.S. Office of Education, 1938); *Large Was Our Bounty* (Washington, D.C.: Association for Supervision and Curriculum Development, 1948).

ILLUSTRATIVE ACTIVITIES USED IN TEACHING CONSERVATION

Conservation of Soil

Taking excursions to see how soil is blown by wind and washed by water;
Planting seeds and observing how plants hold the soil;
Showing films, such as *Rain on the Plains, Soil and Life,* and *Soil Conservation;*
Clipping articles from newspapers and magazines on soil conservation;
Making piles of soil in the schoolyard and observing how they are washed away by rain;
Covering piles of soil with lawn clippings and observing how these lessen washing;
Making collections of different types of soil and observing the differences in color and texture between rich soil and poor soil;
Observing lawns to see what happens to soil where paths are made;
Consulting farmers to find out how the soil is conserved and renewed;
Finding out what local, state, and federal agencies help in soil conservation;
Learning about the cost of erosion in terms of farms lost, homes destroyed, and the reduced prosperity of cities.

Conservation of Forests

Taking field trips to collect and identify leaves;
Drawing leaf prints;
Learning to identify trees in the community;
Planting trees;
Making booklets illustrating the work of the forest ranger;
Making conservation posters;
Drawing pictures of trees studied;
Finding out how rapidly forests are being depleted;
Studying the use of products from forests;
Making booklets about national parks and forests;
Learning songs and poems about trees.

Conservation of Mineral Resources

Learning how the nation's coal and iron can be conserved;
Collecting publications that deal with uses made of petroleum;
Locating the principal oil fields in the nation;
Learning what coal is used for;
Making a survey of the uses of iron in the home and community;
Collecting scrap iron;
Writing articles about the conservation of minerals.

Conservation of Wildlife

Collecting pictures of birds;
Learning to identify different types of birds, such as game birds, song birds, and predatory birds;

Taking a field trip to identify birds;

Finding out where birds live, what they eat, and how they raise their young;

Making birdhouses and birdbaths;

Learning poems and songs about birds;

Drawing pictures of different types of birds;

Listening to phonograph recordings of bird songs and calls;

Learning to identify different kinds of fish;

Taking a trip to a fish hatchery;

Collecting pictures of fish;

Building an aquarium;

Learning poems and songs about fish and fishing;

Finding out what is being done to preserve the supply of fish;

Learning the legal ways of catching fish.

Conservation of Water

Locating the principal rivers in the state;

Finding out how water resources influence the industrial development of the state;

Seeing films of the principal lakes of the state;

Finding out where the city water supply comes from;

Learning how reservoirs and dams help to conserve water;

Finding out about methods used for flood control.

Conservation of Human Resources

Finding out what agencies in the community conserve the health of the people;

Finding out whether all the children in a community are receiving as much education as they should;

Learning about the best use of income;

Studying and practicing ways of preventing accidents.

Intercultural Education

The Constitution of the United States guarantees the "equal protection of the laws" for all persons; full respect for the worth of all individuals, regardless of color, race, or religious belief, is a basic tenet of our democratic tradition. It is generally accepted, therefore, that government, education, communication media, the home, and the church should do everything possible to remove prejudices against minority groups that divide us as a nation and prevent many individuals from full participation in the life of the community and the nation.

Intercultural education is the term used to designate a broadly based program designed to promote the full acceptance of all individuals on the basis of personal merit. The school, as society's chief formal agency for the education of the young, is expected to assume a share of this responsibility. The social-studies program, as that phase of the curriculum which deals most

directly with human relationships, is expected to make a major contribution to this enterprise, although it is understood that the entire life and program of the school is involved in intercultural education.

Although much has been written about intercultural education, very little has been done about developing systematic programs in this field for elementary schools. An experiment conducted in six schools in Philadelphia, Pennsylvania, provides useful guidelines on which future programs can be built. The study was designed to determine the nature and sources of prejudices held by young children and how the children's attitudes could be changed. It led to the conclusion that intercultural education must be a cooperative enterprise, involving the active support of parents, teachers, and community leaders.[18] Discrimination occurs most frequently in this country with respect to Negroes.[19] It occurs also with respect to Jews, Italians, Mexicans, and other racial minorities; it occurs with respect to farm children who move to the cities and with respect to women who aspire to jobs usually held by men. Taba and Elkins have provided an excellent illustration of how intercultural education can be handled in a social-studies unit.[20]

Some basic concepts that a program in intercultural education is designed to develop are:

1. Our interdependent society requires that we learn to respect others, trust others, and learn to work with others.

2. The success of a democratic society depends upon the capacity of individuals to identify with their fellow men.

3. Prejudices and discrimination have weakened our nation and brought suffering to many individuals.

4. Persons from minority groups have made many contributions to our society.

5. There is no scientific evidence that there is any such thing as an inferior or a superior race.

6. Growing toward maturity involves acceptance of others who differ from ourselves in many respects.

Intercultural education is a relatively new venture in elementary schools. It is not surprising, therefore, that methods and materials for this phase of the social-studies program are not as visible as they are for other facets of the program. Indeed, the formal instruction in this area is perhaps less important

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[18] H. G. Trager and M. Radke-Yarrow, *They Learn What They Live* (New York: Harper & Row, Publishers, 1952).

[19] Virgil A. Clift, and others, *Negro Education in America* (New York: Harper & Row, Publishers, 1962), pp. 96–111.

[20] Hilda Taba and D. Elkins, *With Focus on Human Relations* (Washington, D.C.: American Council on Education, 1950), Chapter 6.

than the over-all life and program of the school. Kilpatrick and Van Til emphasize this in the following statement:

> Unless his total schooling and his total living build up in some particular child a sense that he is an important person capable of doing many good things, that child inevitably must remain a poor bet in his intercultural behavior. . . . They [schools] must seize every opportunity to build up in the child a faith in himself. By so doing, they will build up in him a trust of other people.[21]

Nonetheless, the teacher who wants to do something constructive about intercultural education can obtain useful suggestions from many sources. One source reports that teachers have found that pupils develop values such as tolerance by being told, by reading, by talking, by writing, by dramatizing, and by constructive participation.[22] Another source explains how schools can assist children in developing the feeling of identification with others.[23] Another source identifies the reading ladders for human relations.[24]

Economic Education

Until recently the content for the social-studies program in elementary schools came primarily from history and geography. Although these subjects still receive a great deal of emphasis in the social-studies program, there is an increasing tendency to include materials from other social sciences such as political science, economics, sociology, and anthropology. Although it is not feasible to teach separate courses in all six of these disciplines in the elementary school, pupils study topics and work on units that deal with concepts and ideas which relate to these disciplines.

Interest in teaching elementary school children the concepts of economics extends beyond professional education circles. *Reader's Digest* for December 1964 carried an article, "How Children Can Learn the Economic Facts of Life," which described the pilot program in the Elkhart, Indiana, schools and other programs throughout the country. *Look* magazine for January 28, 1964 carried an article by Secretary of Commerce Luther H. Hodges, in which he maintained that the main bout in the current world struggle will be staged in the economic arena. "Since Sputnik," he said, "we have made a massive effort to step up science education; now it is high time we took similar steps to increase our economic understanding, and the place to start is in our grade schools."

[21] William H. Kilpatrick and William Van Til, *Intercultural Attitudes in the Making* (New York: Harper & Row, Publishers, 1947), p. 41.
[22] Association for Supervision and Curriculum Development, *Toward Better Teaching* (Washington, D.C.: The Association, 1949), Chapter 6.
[23] Association for Supervision and Curriculum Development, *Perceiving, Behaving, Becoming* (Washington, D.C.: The Association, 1962), Chapter 11.
[24] Hilda Taba, *Reading Ladders for Human Relations* (Washington, D.C.: American Council on Education, 1947).

Emphasis on economic understanding as a prerequisite to effective citizenship has been increasing for several years. *The Purposes of Education in American Democracy* spelled out in considerable detail the behavior of the educated consumer and producer; about one fourth of this well-known document is devoted to the objectives of economic efficiency.[25] The National Task Force on Economic Education and the National Committee for Education in Family Finance provided leadership in recent years in identifying the minimum economic understandings essential for good citizenship. The latter has sponsored workshops in nineteen colleges and universities with over 700 teachers and administrators attending since 1950. These workshops brought together professional educators, economists, bankers, insurance representatives, and other specialists. They have produced curriculum guides and other materials for elementary and secondary schools. One of the most elaborate of these guides was produced at a workshop at the University of Pennsylvania in the summer of 1958.[26]

A very useful set of instructional materials, called *Our Working World*, has been prepared by Lawrence Senesh, basd on his work with the Elkhart, Indiana, schools.[27] The materials available for the first grade consist of a text for each pupil, an activity book or workbook for each pupil, fourteen records, a resource unit for the teacher, and two film strips. Materials for subsequent grades are now being developed.

State curriculum commissions and local school systems frequently produce curriculum guides for economic education or include sections on the topic in curriculum guides for the social studies.[28] These guides usually identify the concepts to be developed in relation to various topics, suggest teaching materials and methods, and indicate the relationship of economic education to other phases of the social-studies program. One of the most thorough studies of economic education and personal economics available is the doctoral dissertation by Hall.[29] He explains five significant steps in concept development and outlines the concepts to be developed in the study of money, credit, insurance, saving, taxation, and investment. Following are a few of the concepts selected from Hall's list of over 100 concepts and understandings:

1. A thorough understanding of money matters by each family member strengthens the family unit as the basic cultural institution.

[25] Educational Policies Commission, *The Purposes of Education in American Democracy* (Washington, D.C.: National Education Association, 1938), pp. 50–108.
[26] *Children Also Need to Know How to Manage Their Money* (Philadelphia: University of Pennsylvania Press, 1958).
[27] Lawrence Senesh, *Our Working World: Families at Work* (Chicago: Science Research Associates, Inc., 1963).
[28] See Illinois Curriculum Program, *Teaching the Social Studies* (Springfield, Ill.: Superintendent of Public Instruction, 1962); and Department of Instruction, *Economics for the Primary School* (Oklahoma City, Okla.: Oklahoma City Public Schools, 1964).
[29] E. Carl Hall, *Selected Areas of Personal Economics Conceptually Defined* (Norman, Okla.: University of Oklahoma, unpublished doctoral dissertation, 1964).

2. Wise use of credit promotes personal and social economic stability and the democratization process by which the gap between economic and social extremes in society is narrowed.

3. Proper programing of insurance involves consideration of the economic risks and arranging coverage for these risks in order of their importance to family financial security.

4. The savings plan should be tailored to the needs and desires of the family and stimulated by the drive to build something of value for the future.

Education for World Understanding

Elementary schools have for many years been teaching children about other lands, other cultures, and other people; this has been regarded as an essential phase of a basic liberal education. Since World War II, however, a more compelling motive for teaching world understanding has emerged. Our country has assumed a new role in world affairs, science and technology have reduced distances in terms of travel time, and the community in which we live has become global in scope. The teaching of world understanding is now regarded as an instrument for building a stable world order. The late President John F. Kennedy said, "Civilization, it was once said, is a race between education and catastrophe—we intend to win the race for civilization." Brameld maintains that the overarching purpose of schools and colleges, the purpose to which all others are of subordinate importance, is "the creation of a world civilization—a world civilization capable both of preventing destruction and of providing the peace and abundance that men everywhere crave." [30] He quotes, in support of this position, the recommendation of Committee E, which was appointed by the United States Commissioner of Education in 1962 to consider pressing problems confronting American schools in the years ahead.

The National Council for the Social Studies devoted its twenty-fifth yearbook (1954) to suggestions for teaching, at all levels, an understanding of world affairs. Again, in 1964, it published a bulletin, *Improving the Teaching of World Affairs: The Glens Falls Story*, which suggested activities and instruments of evaluation for use in teaching this important area.[31] The bulletin also lists [32] organizations that provide free materials, publications lists, and other useful information, including the Division of International Education of the United States Office of Education, the World Confederation of Organizations of the Teaching Profession, and the American Council on

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[30] Theodore Brameld, "World Civilization, the Galvanizing Purpose of Public Education," in Stanley Elem (Ed.), *New Dimensions for Educational Progress* (Bloomington, Ind.: Phi Delta Kappa, Inc., 1962), pp. 3–4.

[31] Harold M. Long and Robert N. King, *Improving the Teaching of World Affairs: The Glens Falls Story* (Washington, D.C.: National Council for the Social Studies, National Education Association, 1964).

[32] Ibid., pp. 90–92.

Education. The Association for Supervision and Curriculum Development included a section on world understanding in its 1947 yearbook; its Commission on International Understanding encourages the development of resource materials to foster international understanding. State curriculum commissions and local school systems have produced several guides for teaching this area of the social-studies program; some of these are given in a separate section of the selected readings at the close of the chapter.

Introducing children to a study of world affairs does not necessarily mean that disciplines of history, geography, and political science will be neglected; it means that basic generalizations from these and other social science disciplines will be deepened and broadened as the pupil proceeds from grade one through grade twelve. The bulletin of the National Council for the Social Studies [33] lists generalizations that are essentially geographic in nature, generalizations that are essentially economic in nature, generalizations that are essentially social in nature, and generalizations that are essentially political in nature, with appropriate activities through which pupils develop an understanding of these generalizations.

Objectives for the program in international understanding generally include (1) belief in the worth of people of all races and nationalities, (2) an understanding of the likenesses and differences between various cultural groups, (3) an understanding of the services performed by the United Nations organizations, (4) an understanding of world economic and social interdependence, and (5) an understanding of the importance of world peace and unity. Activities that teachers use to help pupils achieve these objectives generally include (1) dramatization, (2) the study of great men and women representing various countries, (3) reading books of many kinds, (4) learning about the music, art, and recreations of people of other countries, (5) making a list of words derived from other languages, (6) correspondence with children in other countries, and (7) comparing the wealth and resources of other countries with those of our country.

SUMMARY

1. Without losing sight of the value of acquiring useful information, the modern social-studies program helps each child to grow continuously in the abilities needed for effective participation in the life of a free society.

2. The social studies are concerned with human relationships, with the development of social literacy, and with the improvement of behavior.

3. The primary objective of the social-studies program is the improvement of group living.

4. The opinions of specialists, as well as current practice, favor the uni-

[33] See footnote 31.

fied social-studies program over the teaching of history, geography, and civics as separate subjects in the elementary school.

5. The sequence of units in the social-studies program generally moves from the child's immediate environment toward places, events, and peoples further removed in time and space.

6. The quality of the social-studies program is determined, in the final analysis, by the procedures that are used to make social experiences functional and meaningful for children.

7. Some of the major characteristics of effective teaching procedures are as follows: (a) children participate in many meaningful activities, (b) many types of instructional materials are used, (c) children learn to assume responsibility, and (d) evaluation of pupil progress is comprehensive, continuous, and cooperative.

8. Newer emphases in the social-studies program include education for family life, conservation education, intercultural education, economic education, and international affairs.

9. The modern social-studies program provides opportunities for children to develop an understanding of our economic system, of our form of government, of the history of our nation, of the differences and similarities of peoples, of the contributions made by individual citizens to the general welfare, and of the rights and duties of citizens in a democracy.

SELECTED READINGS

Association for Supervision and Curriculum Development, *Using Current Curriculum Developments*. Washington, D.C.: The Association, 1963. Chapter 8 reviews national projects in the social studies that have been launched in recent years.

Clift, Virgil A., and others, *Negro Education in America*. New York: Harper & Row, Publishers, 1962. Reviews the evidence concerning superior and inferior races.

Huus, Helen, *Children's Books to Enrich the Social Studies: For the Elementary Grades*. Washington, D.C.: National Council for the Social Studies, National Education Association, 1961. Provides a well-annotated list of children's books on our world, times past, people today, the world's work, and living together.

Illinois Curriculum Program, *Teaching the Social Studies*, Bulletin C-7. Springfield, Ill.: Superintendent of Public Instruction, 1962. Explains how the disciplines of history, geography, economics, political science, and others can provide content for the social-studies program of elementary schools.

Jarolimek, John, *Social Studies in Elementary Education*. Second ed.; New York: The Macmillan Company, 1963. An excellent college text, which presents the point of view that in order to teach successfully the teacher must (1) know children, (2) know content and be able to translate it for children, and (3) know materials and teaching procedures.

Long, Harold M., and Robert N. King, *Improving the Teaching of World Affairs: The Glens Falls Story*. Washington, D.C.: National Council for the Social Studies, National Education Association, 1964. Suggests goals, activities, evaluation procedures, and materials for the study of world affairs.

Michaelis, John U. (Ed.), *Social Studies in Elementary Schools*. Washington, D.C.: National Council for the Social Studies, National Education Association, 1962. An up-to-date treatment of trends, content, organization, materials, and evaluation in the social studies.

National Council for the Social Studies, *A Guide to Content in the Social Studies*. Washington, D.C.: National Education Association, 1958. Explains how the content of the social studies can be centered around significant themes, with the various disciplines being emphasized in connection with the theme.

Ragan, William B., and John D. McAulay, *Social Studies for Today's Children*. New York: Appleton-Century-Crofts, 1964. Part 3 deals with vitalizing the teaching of the social studies.

RESOURCES FOR TEACHERS ON INTERNATIONAL UNDERSTANDING

Anderson, Howard R. (Ed.), *Approaches to an Understanding of World Affairs*. Washington, D.C.: National Council for the Social Studies, National Education Association, 1954.

Association for Supervision and Curriculum Development, *Organizing the Elementary School for Living and Learning*. Washngton, D.C.: The Association, 1947, Chapter 5.

Committee on International Relations, *Resources for Teaching about the United Nations*. Washington, D.C.: National Education Association, 1962.

The Development of Resource Units about India. Bellevue, Wash.: Bellevue Public Schools, 1963.

Kenworthy, Leonard S., *Introducing Children to the World: In Elementary and Junior High Schools*. New York: Harper & Row, Publishers, 1956.

Long, Harold M., and Robert N. King, *Improving the Teaching of World Affairs: The Glen Falls Story*. Washington, D.C.: National Council for the Social Studies, National Education Association, 1964.

Preston, Ralph C. (Ed.), *Teaching World Understanding*. Englewood Cliffs, N.J.: Prentice-Hall, Inc., 1955.

Toward Better International Understanding: A Manual for Teachers. New York: New York City Board of Education, 1960.

The United States and the World from 1700–1900. Bellevue, Wash.: Bellevue Public Schools, 1963.

RESOURCES FOR PUPILS ON INTERNATIONAL UNDERSTANDING

Huus, Helen, *Children's Books to Enrich the Social Studies: For the Elementary Grades*. Washington, D.C.: National Council for the Social Studies, National Education Association, 1961.

SELECTED FILMS

Are You a Good Citizen? An eleven-minute sound film, presenting a check list of citizenship essentials. (Coronet Films)

Common Fallacies about Group Differences. A fifteen-minute sound film. Analyzes seven common notions about races, heredity, and group differences in the light of scientific evidence and shows that they are all fallacies. (McGraw-Hill, Inc.)

Our Living Constitution. An eleven-minute sound film, illustrating the importance of the Constitution in everyday life. (Coronet Films)

School: The Child's Community. A seventeen-minute sound film, illustrating the problem-centered activities of a modern elementary school. (Wayne State University)

Social Development. An eleven-minute sound film, dealing with social development at different age levels. (McGraw-Hill, Inc.)

Photo Comment

REFORM IN THE SOCIAL STUDIES

Cognitive psychologists like Bruner have been advising that curriculum reform for any subject should be based upon an analysis of the structure of that subject. Key concepts must be identified, concepts that can be used over and over again to order a multitude of data. The success of "new math" and "new science" programs is due in large part to the fact that the structure of the disciplines involved was first identified, and then broken down into sequential units ranging from simple to complex. The simpler, appropriate for school beginners, nevertheless is respectable subject matter.

Reform in the social studies has been slower to come, partly because of the large number of disciplines involved. Concepts from history, sociology, anthropology, economics, geography, and political science are all a part of elementary school social studies. Someone must make decisions as to what is important to teach in each field, and a grand plan must be created which will include all the social sciences in some manageable way.

So far, the most successful and thorough reform has been in the area of economics. Dr. Lawrence Senesh of Purdue University has developed a curriculum in which basic economics is introduced in the primary grades. The photos show how the fundamentals of international trading can be taught to young children in a meaningful way. The key concept in the lesson is that it pays for a country to specialize in the production of one commodity, even if the country can produce many things better than other countries. Involved here is the theory of comparative advantage; by virtue of differences in climate, raw materials, skills, availability of tools, and accessibility to markets, one country may be in a particularly advantageous position to produce a certain commodity. While it is a far cry from complete curricular reform, the economics curriculum offers promising leads to what should be done in other social science disciplines.

Trading Helps Everyone

There were two little islands in the middle of a lake. The Adams family lived on one island. The Baker family lived on the other. Each family grew potatoes on one side of their island and tomatoes on the other side.
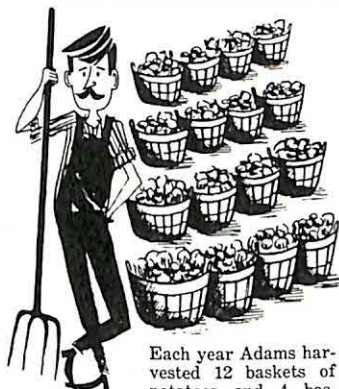
Each year Adams harvested 12 baskets of potatoes and 4 baskets of tomatoes.
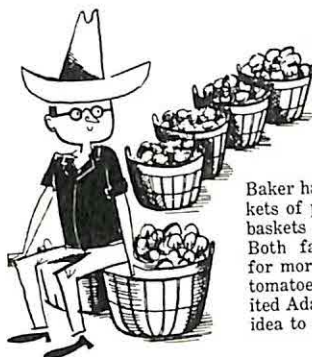
Baker harvested 4 baskets of potatoes and 2 baskets of tomatoes. Both families wished for more potatoes and tomatoes. Baker visited Adams. He had an idea to talk about.

Baker said, "You produced 3 times as many potatoes and 2 times as many tomatoes as I. Since you grow potatoes best, why don't you specialize in potatoes next season. I'll specialize in tomatoes, and then we can trade." This is what they did.
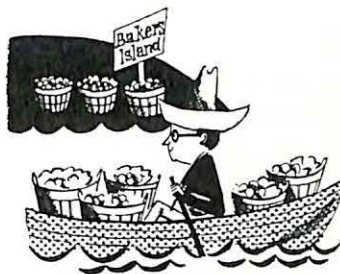
Baker thought, "I need only 3 baskets of tomatoes for my family. I will take 5 baskets to Adams and trade for some of his potatoes."
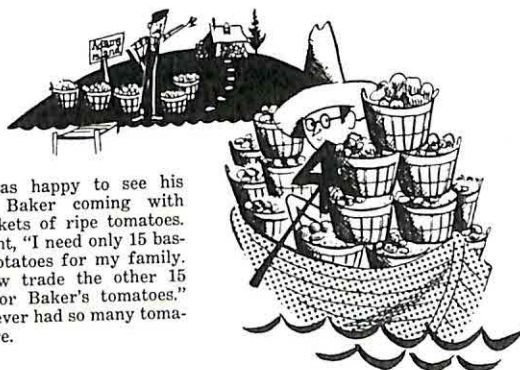
Adams was happy to see his neighbor Baker coming with the 5 baskets of ripe tomatoes. He thought, "I need only 15 baskets of potatoes for my family. I can now trade the other 15 baskets for Baker's tomatoes." He had never had so many tomatoes before.

Problems and Projects

1. A typical curriculum in social studies for the third grade centers on a study of the local community and, by way of contrast, Indian life in that and other communities at the time of the arrival of the first settlers. Listed for study are the topics: ways of earning a living; how the community is supplied with food, water, and other necessities; local government; early history, including Indian life. These topics draw upon subject matter in the social sciences, in the disciplines of economics, political science, history, and anthropology. In this text, the point of view has been presented that academicians today are concerned about the structure of their subject, and that curriculum makers seek to base elementary curriculum upon structure as it has been identified by academicians. The structure consists of the key concepts in the discipline.

Dr. Lawrence Senesh has proposed a new curriculum for the primary grades based largely upon the discipline of economics. Read his Our Working World: Families at Work (Chicago: Science Research Associates, Inc., 1963). Make a list of the key economic concepts in the book. How could these concepts be used in the typical third-grade curriculum described above?

2. Curriculum specialists agree that the social studies should contribute to better intergroup relations. To that end, schools often include content and activities designed to eliminate prejudice and to foster understanding of minority groups. Suppose you were teaching in a school system using a curriculum guide similar to the one described on pp. 301–302. Suggest for each of the units listed concepts that might further intergroup understanding. For example, in the first three grades, what concepts might be taught about local housing patterns? About employment opportunities for racial minorities? In connection with which units in grades four through eight might such concepts be included?

It is sometimes argued that complex issues like that of integrated housing have no place in the primary grades. If young children are to study life in a city community, the topics ought to be confined to the status quo. Pupils should study how houses are built and where the materials come from (the argument goes) rather than about the problems of slums and ghettoes. Take a position on this issue and be prepared to defend it in class.

3. Learning activities in the social studies, as in other curriculum areas, must be justified chiefly on the basis of their contribution to cognitive development. At the present time, however, there are activities in vogue in elementary schools, consuming considerable pupil time while adding little to their knowledge. These activities are justified on the grounds that the children are learning skills for democratic living.

Write your criticism or justification for each of the following activities. Does each include enough subject matter to warrant the activity? Are there possibilities in each for social learnings as concomitant learnings? What changes can you suggest to make each a more worthwhile learning experience?

a. Second-grade children decided to set up a play grocery store in the classroom. A committee was appointed by the room chairman to measure and find a space for the store. Then, after a planning session, a building committee was set up to construct the store, an art committee to decorate the store, and a health committee to see that the store was stocked with foods essential to health. Apple boxes were brought in for shelves and corrugated cardboard for the walls, to be decorated by the art committee. The janitor helped with some of the harder construction problems and the finished store was an impressive-looking building. Every child in the classroom participated in the activity and all worked enthusiastically and persistently.

b. Fifth-grade pupils, working in committees, constructed a model of a satellite out of papier-mâché.

c. A group of sixth-grade children made a relief map of South America, modeling it on a large sheet of plywood out of wood putty. They included, among other features, the two largest lakes, the Andes, plateaus among the Andean peaks, the Guanian and Brazilian highlands, important passes in the Andes, the coastal plain, the important rivers and some of their tributaries.

4. In their study of geography, pupils need to learn certain map-reading skills. They need to know how to use the grid system for location of geographical features, and how to read and use the key. List other skills necessary for map reading. Then plan a sequence of activities, grades one through six, to teach the skills. In your planning it will be useful to examine J. Piaget and B. Inhelder, The Child's Conception of Space, so that you can fit your sequence to the child's developmental stage.

5. The good social-studies teacher is very often faced with making a decision regarding the study of controversial issues. Such is the problem of a fifth-grade teacher in Centerville who does not know whether her class should study the United Nations as the course of study requires. Teachers in a neighboring community have run into difficulty with community groups for including the United Nations in the curriculum. What should our fifth-grade teacher do? Should she avoid the controversial? If she includes the United Nations, what should be her approach? Is the best solution presenting both sides (as if there were only two) and letting pupils make up their minds, or does a teacher have a responsibility for helping pupils evaluate decisions from the standpoint of democratic values?

Understanding Quantitative Relationships: Elementary School Mathematics

The current "revolution" in school mathematics is not entirely new. It may be viewed as an extension and modification of the "meaning" theory of arithmetic which gained prominence in the 1930s. Indeed, Brownell wrote, in 1935, "The basic tenet in the proposed instructional reorganization is to make arithmetic less a challenge to the pupil's memory and more a challenge to his intelligence." [1] The revolution in the mathematics curriculum has become so widespread, however, that it is essential that students of modern elementary curriculum examine and understand it.

Changes in the mathematics program in elementary schools have emerged from many sources: from societal changes that have resulted in a need for more mathematical competence, from advancements in learning theory that make possible more effective instructional procedures, from the fact that more

[1] W. C. Brownell, "Psychological Considerations in the Learning and Teaching of Arithmetic," *The Teaching of Arithmetic* (Washington, D.C.: National Council of Teachers of Mathematics, 1935), p. 10.

advances in mathematics have been made during the twentieth century than in all the previous history of the world, from the fact that mathematicians have recently acquired an interest in improving elementary and secondary school programs, and from the fact that developing the rational powers of the pupil has recently received increasing recognition as the central purpose of education.[2]

EXPERIMENTAL PROGRAMS IN ELEMENTARY SCHOOL MATHEMATICS [3]

A description of all the experimental programs in modern mathematics for elementary schools would be next to impossible; every publisher of elementary school textbook series as well as many of the larger school systems has its own program. The section that follows contains an analysis of some of the experimental programs in elementary school mathematics that have been subsidized partially or totally by the National Science Foundation or by private foundations.

The Greater Cleveland Mathematics Program

Twenty-five school districts and two private schools in the Cleveland area comprise the organization known as the Educational Research Council of Greater Cleveland. This organization created the Greater Cleveland Mathematics Program in 1959 as an instrument for developing the most effective curriculum possible for mathematics in kindergarten through grade twelve. The project was designed to present mathematics to all children in a logical and systematic fashion so that mathematical concepts would be understood and subsequently used in developing computational algorisms. Emphasis on the discovery approach shifted the interest in teaching mathematics as a way of doing something toward teaching mathematics as a way of thinking.

The sequential development of mathematical concepts characterized the entire program; those in charge of the project sought diligently to provide pupils with the necessary mathematical background before introducing them to a new topic or process so that, as pupils became proficient in the use of the discovery approach, they were able to proceed from concept to concept unassisted. For example, after pupils in the primary grades have been introduced to addition, they have had wide experience with number facts whose sums are ten or less, the commutative and associative properties of addition, renaming numbers, and expanded notation. When the pupil is confronted with $8 + 5 = \underline{\hspace{1cm}}$, although he doesn't know the sum, he is able to reason

from his previous experience that $8 + 5 = 8 + (2 + 3) = (8 + 2) + 3 = 10 + 3 = 13$.

The Greater Cleveland Mathematics Program now has a complete set of materials for teachers and pupils that is published commercially. The unique characteristics of the program include (1) an instructional aid called the counting man, (2) no formal notation of sets, (3) very little reading materials for pupils, and (4) rationalization of the operations of multiplication and division, respectively, as repeated addition and subtraction.

The University of Illinois Arithmetic Project

The University of Illinois project was an outgrowth of the University of Illinois Committee on School Mathematics. As a member of this committee, David Page became interested in exploring the possibility of using novel and effective methods of presenting mathematical concepts to pupils; later he began exploring the possibility of organizing more sophisticated mathematical concepts in such a manner that they could be both understood by and interesting to pupils in the elementary school.

The project developed materials including units of work on number lines, frames, negative numbers, properties of the rational number system, estimation, and lattices. The unit on frames is an informal approach to the concept of variable. Frames of the same shape in a given mathematical sentence indicate that each frame represents the same number. For example, $\square \times \square \times \square = 8$ indicates that $\square = 2$ or $\bigcirc \times \bigcirc = \bigcirc$ indicates that $\bigcirc = \bigcirc$ or 1.

The priority given to the method of presentation of a concept is a unique characteristic of the University of Illinois Arithmetic Project. The project does not attempt to present a fully developed curriculum in elementary school mathematics and there is little emphasis on computation or the development of a precise vocabulary; the emphasis is on thinking, oral work, and concept development.

The Madison Project

The Madison Project, directed by Robert Davis of Syracuse University, is primarily a behavioral study concerned with learning how people learn mathematics. Stated purposes include (1) to promote greater interest in mathematics, (2) to stimulate children to think more creatively about mathematics, and (3) to provide a sounder background for future mathematics. The project has made no attempt to develop a complete mathematics program for elementary schools; instead the materials produced are regarded as enrichment materials. The content of the materials is primarily algebraic and geometric, and the writing is easily understood by pupils in grades three through seven. The program includes the use of demonstration centers, tapes, and films to be used in in-service education programs for teachers.

The School Mathematics Study Group

The SMSG, under the direction of E. G. Begle of Stanford University, was instituted in 1959. A mathematics curriculum for kindergarten through grade twelve was completed in 1965. Materials were written in unit form by mathematicians, psychologists, and educators. The units were used in classrooms, evaluated, arranged in grade-level sequence, and published in a preliminary edition. The preliminary edition was again used in classrooms for one year, evaluated, revised, and published in final form.

The major objective of the SMSG project was to provide direction to commercial publishing companies, schools of education, and school systems on the scope of the mathematics program for elementary and secondary schools. The project emphasized the study of (1) grade placement of topics, (2) the development of concepts and mathematical principles, (3) the introduction of new topics, particularly from geometry, (4) programs for abler learners, (5) teacher education, (6) the relation of elementary school mathematics to future study of the subject, (7) methods and materials for effective classroom instruction, and (8) the application of findings on concept formation from child psychology to the learning of mathematics. The structure of number systems is emphasized and presented in terms of sets; concepts of geometry, measurement, and functions are presented in terms of sets of points, regions, and ordered pairs. Although other projects have given more attention to certain aspects of the teaching of mathematics, the SMSG program has made the most useful contribution in terms of the nature of an over-all program.

The Stanford Project

The Stanford Project, titled *Sets and Numbers*, is directed by Patrick Suppes of Stanford University. The primary objective is to develop and test materials for a mathematics program for kindergarten through grade six. The intention is to develop a program that is mathematically sound and pedagogically feasible. The underlying assumption is that all mathematics can be developed from the concepts of sets and set operations. Hence, the concept of number is developed as a property of sets early in the formal school experiences of the child. From the outset, sets are presented in conventional notation. The sequence of concepts goes from individual objects, □ or ○, to sets containing those objects { □, ○ }, to the cardinality (number property) of the set n { □, ○ }, to the name (numeral) of the number, 2. In a similar manner, the operations of number are introduced in terms of sets and set operations.[4]

[4] For additional information relating to elementary school mathematics projects and lists of materials that can be obtained, see Bowen C. Dees, *Science Improvement Projects: Mathematics—Science—Engineering* (Washington, D.C.: National Science Foundation, 1962).

Although each of the mathematics projects has had its unique goals and areas of major emphasis, several common characteristics are found in the projects dealing with mathematics for elementary schools. One of the most notable characteristics is the effort to use precise and mathematically acceptable vocabulary—to use the right term to designate a concept or process. The distinction between number and numeral is a case in point; the Hindu-Arabic system is a system of numeration, not a number system.

Moving content so that topics and processes are taught earlier in the school experience of the pupil is another significant characteristic. Multiplication and division of whole numbers is introduced in grades one and two, and by the end of grade three most pupils have developed reasonable facility with all the facts, and understand the algorisms of these operations. Operations with fractions are introduced from one to two years earlier, and by the end of the sixth year many pupils are performing operations on negative numbers and using exponential notation when studying systems of numeration with bases other than ten. Pupils are also introduced to algebra and geometry in the elementary school.

Other common characteristics of these mathematics projects are use of the discovery approach to learning, emphasis in the importance of understanding the structure of mathematics, concern for the achievement of understanding and concept formation, and the acquisition of skills through use in meaningful situations. Finally, the directors of the projects regard the present as a period of transition in the mathematics program; they do not believe that the programs developed constitute fixed and final solutions; and they expect the tempo of change in the mathematics curriculum to increase rather than decrease in the years ahead.

THE CONTENT OF ELEMENTARY SCHOOL MATHEMATICS

Arithmetic, which may be regarded as the study of number systems, still plays an important role in the modern elementary school mathematics program. Children are still taught to count, add, subtract, multiply, and divide; they are still taught to work with fractional numbers, fractional numbers expressed as decimals, percent, measuring, and solving word problems. However, new content and new procedures have been introduced. The content of modern programs is generally presented in terms of eight strands, representing unifying themes that permeate the entire mathematics curriculum in elementary and secondary schools: number systems, geometry, measurement, problem solving, sets, logic, mathematical sentences, and functions and graphs. The basic operations are included under the heading of number systems. The first four of these strands represent areas of mathematics that are taught systematically in elementary schools; the last four may be regarded as aspects of mathematics with which teachers need to be familiar in order to

work effectively in guiding learning activities. The order in which these strands are presented here should not be taken to mean that this is the order in which topics are to be presented to pupils; rather, some general aspects of mathematics are presented first so that the teacher can better understand the terminology used when more specific topics are presented later in the chapter.

Logic: The Grammar of Mathematics

Conclusions must be derived and decisions must be made in mathematics as in other areas of study and in life situations. Conclusions drawn in mathematics are generally known as answers, solutions, or truth sets. These conclusions are justified only by the proper use of laws within the particular branch of mathematics under consideration. The proper use of laws to justify each sequential step leading to a conclusion is known as logical reasoning; conclusions derived from such a procedure constitute a proof. Hence, by the very nature of the content, it is imperative that a student of mathematics understand and be able to use the basic tools of logic.

Logic is basically the language of mathematics: It provides a way of organizing mathematical ideas and of clarifying their meaning. This may be illustrated by reference to concepts of quantifiers, counterexamples, connectives, rules of inference, the nature of proof, identity, and definition. Precision of vocabulary is illustrated in the use of quantifiers "all" and "some." Pupils learn early to distinguish between such statements as "Some children erase the chalkboard" and "All children erase the chalkboard." The quantifier "some" means at least one; the quantifier "all" means every member of the group. A counterexample is sufficient to disprove any generalization or theorem. For example, "All prime numbers are also odd numbers." Identification of 2 as being prime and not odd is a counterexample that disproves the statement. Experiences of this type develop an understanding of what constitutes proof. Informal experiences with the connectives of logic—"and," "or," "not," and "if-then" enable pupils to make a distinction between statements such as, "A number is divisible by two and five if . . ." and "A number is divisible by two or five if. . . ." "Not," the term used for negation of a statement in logic, is helpful in illustrating the fallacy of using the double negative in everyday conversation. "If-then" statements are used often in mathematics. For example, "If all points in a geometric figure are equidistant from a given point, then the set of points represents a circle."

Sets

As logic is the underlying concept in mathematical reasoning, so is the concept of set the underlying factor in the communication of mathematical ideas. It provides a precise and consistent means of communicating mathematical ideas from the primitive concepts of number and point to the most sophisticated studies of abstract mathematics. The fact that pupils enjoy

working with sets does not, however, constitute the reason for including this strand in the mathematics curriculum; instruction involving sets is fruitless unless the activity conveys some mathematical ideas. A set means more than simply a collection of objects. An important aspect of the mathematical concept of a set is the well-defined property. This means that once a certain set is described we can determine whether or not a given object is a member of the set. If set x is defined as the set of odd numbers between 2 and 10, then we know exactly the members (elements) of set x. Precisely, then a set should be regarded as a collection of well-defined objects.

Pupils develop the abstract concept of number in the following manner: They are presented with three sets which apparently have no common factors among the various set members, as:

$$\{+, -, \times\} \quad \{a, b, c\} \quad \{p, q, r\}.$$
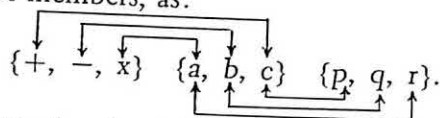
However, the members of each set in the group (set of sets) can be matched one to one with the members of each other set in the group. Hence, the common property of all the sets is number; each set has three members. The cardinality (common property) of these sets is three.

The pupil will find that the modern mathematics program involves consistent use of set notation: a set is marked off by brackets { }; each element in the set is separated from the other elements in the set by commas $\{a,b,c,d\}$ and the letter n immediately preceding the left brace implies that consideration is given to the number property of the set rather than to the set itself. If $A = \{a,b,c,d\}$, then $n\{a,b,c,d\} = 4$ or $n(A) = 4$.

Number Systems

The elementary school mathematics program is primarily concerned with two mathematical systems: the system of whole numbers and the rational number system. The system of whole numbers includes the naming of numbers (numeration) and operations on sets of numbers—addition and multiplication and subtraction and division. Fractional numbers, fractional numbers expressed as decimals, and percent are included in the rational number system. The use of set concepts permeates the whole elementary school program.

COUNTING THE MEMBERS OF A SET   The pupil counts the number of members in a set by pairing the members of the set with numbers.

$$p, \quad q, \quad r, \quad s, \quad t, \quad u, \quad v, \quad w$$
$$1, \quad 2, \quad 3, \quad 4, \quad 5, \quad 6, \quad 7, \quad 8$$

Thus, there are eight members in the set. If the class is divided into three groups, the pupils in each group can pair each pupil with a number and tell how many pupils are in that group. A cardinal number tells how many members are in a set. A similar process may be used to help pupils learn that

cardinal numbers are used to identify members in an ordered set. Thus, Mary may be first and John second.

The process of *addition* begins when the pupils find that by counting the members of two sets they obtain a third set. Thus, from {+, x, y} and {0, M, &, 9} they obtain a new set {+, x, y, 0, M, &, 9}. The first set has 3 members, the second set has 4 members, and the third set has 7 members. Seven may then be said to be the sum of 3 and 4. Addition has been called the union of disjoint sets. The term *disjoint* means that the two original sets do not contain any common members. Thus, if member M appeared in both the first and second sets, the sum would not be 7 but 6.

Subtraction can also be approached from the framework of sets. It is generally regarded as the inverse of addition. When the mathematical sentence is considered in terms of addends and a sum, the sequence of steps may proceed as follows:

1. If $\square + 3 = 5$, then find the missing addend. After the pupil has experienced this type situation, he is asked if the sentence might be restated, using a different operation so that the sentence would still have the same meaning.

2. If $5 - 3 = \square$, where $\square$ represents the missing addend as in (1), then $\square$ is a placeholder for the number 2. The mathematical sentences "$\square + 3 = 5$" and "$5 - 3 = \square$" are equivalent, and illustrate the concept that subtraction is the inverse operation of addition.

In terms of set theory, the pupil starts with a set of objects, partitions it into two subsets, takes away one of the subsets, and finds how many members remain in the set.

Multiplication may be introduced as repeated addition, as jumps on the number line, as the Cartesian product of sets, or as arrays. Let us illustrate the last-named approach, using only rectangular arrays.
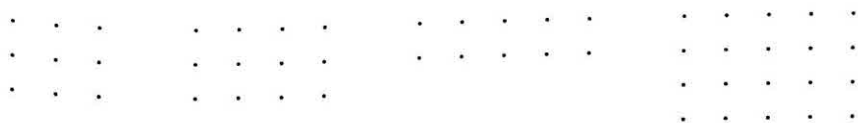
The arrays may be represented as follows: (3,3) (3,4) (2,5) (4,5). The first numeral names the number property of the rows (horizontal) in the array and the second numeral indicates the number property of the columns. For example, the second array is a three-by-four (3 × 4) array, where the number property of the rows is 3 and columns, 4. Finally, the number property of the array itself is 12. Hence, the mathematical sentence, "3 × 4 = 12" where 3 and 4 are factors and 12 is the product.

With this type of introduction, the pupil is able to visualize a geometric representation of any multiplication problem. The accepted premise is that

the pupil can acquire a clear understanding of the multiplication operation by using arrays to picture a given problem.

Division is the inverse operation of multiplication. The pupil is confronted with finding a missing factor, for example, $6 \times \square = 24$. After practice with this, the pupil becomes aware of the convention of calling this operation division, and constructs the appropriate mathematical sentence, $24 \div 6 = \square$. In east sentence $\square$ represents the missing factor. In subtraction and in division sets and arrays may be used to rationale the operation. However, it is assumed here that the relationship existing between the operations is sufficiently understood by using the concept of inverse operations.

An understanding of operations with whole numbers involves finding out in what respects these operations are alike and in what respects they are different. Those who are concerned with these relationships have introduced such terms as *closure, commutative property, associative property, identity element*, and *distributive property*. These properties may be explained by raising a series of questions.

1. If I select any two whole numbers and add them, then is there an answer? If so, is it the only answer? Is the answer a member of the set of whole numbers? If the response to each of these questions is affirmative, then it appears that the operation of addition is *closed* in the whole number system. Another way of saying this is that the set of natural numbers is closed under addition because the sum of any pair of natural numbers is a natural number. Is this true for other operations?

2. If I select two whole numbers and subtract them, then is the result changed if I invert their order? For example, does $14 - 8 = 8 - 14$? A positive response indicates that the operation is commutative. How many counterexamples must you show before you can assume the operation is not commutative?

3. If I have an addition problem with three addends 8, 9, 6, then does the sum change if I group them as $(8 + 9) + 6$ or as $8 + (9 + 6)$? The associative property is accepted if the result appears to be unchanged for any three whole numbers. Is this property true for the other operations?

4. If any whole number is selected as a factor, then is there a second factor (also a whole number) so that their product is the same as the first factor? If this second factor exists, it can be said that there is an *identity element* for multiplication. Do the other operations also have an identity element?

5. The question relating to the distributive property can best be introduced by using a number of mathematical sentences.

	yes	no
a. $(5 + 4) \times 6 = (5 \times 6) + (4 \times 6)$	yes	no
b. $(9 - 3) \times 4 = (9 \times 4) - (3 \times 4)$	yes	no
c. $(9 \times 3) + 5 = (9 + 5) \times (3 + 5)$	yes	no

d. $(12 + 6) \div 3 = (12 \div 3) + (6 \div 3)$	yes	no
e. $(12 \div 6) - 2 = (12 - 2) \div (6 - 2)$	yes	no
f. $(16 - 12) \div 4 = (16 \div 4) - (12 \div 4)$	yes	no

Briefly, if these sentences appear to be true for any three whole numbers, then (a) indicates that multiplication distributes over addition; (b) indicates that multiplication distributes over subtraction; (c) indicates that addition distributes over multiplication; (d) indicates that division distributes over addition; (e) indicates that subtraction distributes over division; and (f) indicates that division distributes over subtraction.

The following represents a summary of the properties of various operations for whole numbers. The operations of addition and multiplication are (1) closed, (2) commutative, (3) associative and (4) each has an identity element. Neither (1), (2), nor (3) is true for subtraction and division, but in a restricted sense (4) could be justified. The distributive property—multiplication distributes over addition—is a generally accepted property. With appropriate interpretations the following are also acceptable: multiplication distributes over subtraction and division distributes over addition as well as subtraction.

Fractional numbers are introduced early in the school experience of children because children encounter the idea of fractions even before they enter school and because growth in understanding concepts involving fractions is a gradual process. The set theory applies to the introduction of fractions as it does to other topics. Children learn to recognize commonly used fractions such as $\frac{1}{2}$ as subsets of a given set of objects, by comparing the number of members in two sets. If there are three members in one set and two in another, pupils find that three fifths of the members in the two sets are in the first set. Pupils learn that, in the language of mathematics, the *denominator* names the number of parts into which a physical object is separated, and the *numerator* names the number of parts being considered.

A *decimal* is a symbol that names a fractional number when the second number (expressed in the form of a fraction) is a power of 10. Thus, 0.06 may also be expressed as 6 over 100. Pupils can be helped to understand decimals by understanding that places to the left of a decimal point are interpreted as ones, tens, hundreds, and thousands, while those to the right of the decimal point are read tenths, hundredths, and thousandths. Pupils are taught the meaning of terminology and repeating decimals, addition and subtraction of decimals, and multiplication and division of decimals.

The importance of learning the uses of *percent* can be seen by reference to any newspaper, whether it is the editorial page or the sports section. Pupils learn that a given ratio can be expressed in three ways: as a fraction, as a decimal, and as a percent. The program in learning about percent consists of three phases: developing the meaning of percent, developing computational skills, and solving problems using percent.

Geometry

Geometry is introduced in the elementary school mathematics program for the purpose of helping pupils understand and interpret the physical world in which they live and for the purpose of helping them acquire basic concepts and vocabulary that will be used as they continue to study mathematics. The child's first contact with geometry occurs before he enters school; it should continue as long as he is in school. The geometry studied in the elementary school, however, is not the same type as that which has traditionally been taught in the tenth grade. The intuitive approach is generally used; pupils are encouraged to formulate precise language and to use logical thinking as they deal with objects in the physical world about them.

Many of the properties of geometry can be discovered as pupils are engaged in activities involving familiar objects and ideas. Pupils can be led to make important generalizations about sizes, shapes, and relationships of objects in the physical world. Their curiosity about such phenomena as the spiral of a snail's shell, the symmetry of a snowflake, the paths of planets, and the hexagonal structure of a beehive, provides an opportunity for bringing their observations together in the form of underlying principles such as symmetry, parallelism, perpendicularity, congruence, and similarity.

The geometry program in the elementary school is not concerned with complex vocabulary or formal proofs; it is concerned with intuitive perceptions, freedom of thought, and sufficient vocabulary to enable pupils to express their ideas. Geometry, like other subjects, has certain foundation blocks that must be laid before serious study can begin. These blocks or concepts can be developed intuitively by pupils in elementary schools. The basic concepts relate to point, line, curve, plane, and space.

OBJECTIVES OF THE GEOMETRY PROGRAM

1. To develop an understanding that a point may be described as a position in space; also that a point has no size or shape;
2. To develop an understanding that a line can be represented by pencil or chalk streaks, that our lines will be straight lines. Since lines go on forever in both directions, you can only draw a picture of a part of a straight line;
3. To develop an understanding that a part of a plane is the set of points in space that are on flat surfaces, such as a sheet of paper lying flat;
4. To develop an understanding of intersection and union as applied to points, lines, and planes; to define segment, ray, and angle; and to develop an understanding of basic principles, such as:

    a. Through any two points in space, there is exactly one line.
    b. If a line contains two different points of a plane, then it lies in the plane.

c. Any three points not on the same line are in only one plane.

d. If the intersection of two different planes is not empty, then the intersection is a line.

5. To develop the following understandings of simple closed curves:

a. A simple closed curve is a path whose points all lie in a plane.

b. A polygon is a special type of simple closed curve that is a union of line segments.

c. A circle is a simple closed curve with all its points the same distance from the center, and all its radii equal in length.

d. The interior and exterior are not parts of the simple closed curve.

e. The union of the simple closed curve and its interior is a *plane region*.

6. To develop some understanding of special features of polygons and circles and some understanding of relationships such as congruence and similarity.

a. A line segment is a special curve thought of as the most direct path between two points.

b. A simple closed curve separates a plane into two sets: the points of the interior and the points of the exterior. The curve itself is the *boundary* and is contained in neither the interior nor the exterior.

c. Two or more geometric figures are *similar* if and only if they have the same shape.

d. Two or more geometric figures are *congruent* if and only if they have exactly the same size and shape.

Geometric construction, involving the use of the straightedge, compass, and protractor, is also emphasized in the elementary school program, as is the use of the number line to provide an appropriate intuitive foundation for the eventual identification of the Euclidean line with the set of real numbers.

Measurement

A first quantitative need of any society is a system of standard measurement. Indeed, measurement is such an integral part of living that we are often not cognizant of its extensive use and involvement in our thoughts, observations, other experiences, and the making of decisions. Since measurement is a key process in the application of mathematics (it is the connecting link between mathematics and our milieu), it is vitally important that all pupils engage in an analytical study of the measuring process.

Intuitively, everyone seems to have an acceptable operational concept of measurement, however, in the new math and therefore in this discussion the following statements serve to delimit the concept. The process of measuring consists of choosing the proper unit and comparing with that unit; compari-

son is usually made with some known or accepted reference unit. Measurement is a process whereby numbers are assigned to certain quantitative facets of a culture, namely those facets concerned with magnitude rather than multiplicity. More precisely, a measurement is expressed by a combination of two things: the *measure* that shows "how many," and the *unit of measure* that shows the unit with which the quantity to be measured is compared. It should be noted that a measurement is *not* a number. For example, the measurement 100 meters shows the measure "100" in the unit "meters."

One of the more interesting questions that arises from this view of measurement is: What does equality mean in measurement? For example, is the statement "two yards equal six feet" true? Recall that "six feet" and "two yards" are measurements; "6" and "2" are measures; and "feet" and "yards" are units of measure. If there is equality, what is equal? The measures? The units of measure? To avoid the apparent lack of meaning in the sample statement the following convention has been accepted by most mathematics educators: two yards $\overset{m}{=}$ six feet. The statement is read as "two yards has the same measure as six feet."

Perhaps the reader feels this is being a bit too precise. However, when one considers that the relation of equality is an equivalence relation, he knows that two objects are equal if and only if one is a mirror image of the other. Now, it is obvious that $6 \neq 2$, six feet $\neq$ two yards, and feet $\neq$ yards. Hence, the convention "has the same measure as" symbolized by $\overset{m}{=}$.

A second set of questions emanates from the idea of the *unit of measure*, which is often accepted as being all standard units, but even today one often improvises when the need for measurement arises and he is without a standard unit of measure. In the elementary school program, experiences with non-standard units provoke thoughts about the process of measuring that usually lead the pupils to discover the necessity of using standard units. Pupils also become aware that standard units of measure are really conventions of man and not a priori.

When this stage is reached teachers can readily assist pupils in ascertaining the fact that a standard unit of measure is one that is precisely defined and legally established. For instance, the legal standard of length in the United States is the meter, not the yard. A meter is the length of 1,553,164.13 wavelengths of red cadmium light waves under specified conditions. Subsequently, the yard is defined as exactly 0.9144 meters.

The measuring process, in every case, results in associating a number with some physical quantity. Any measurement made by a direct comparison of a unit of measure with an object is a *direct* measurement. Contrastingly, measuring time, velocity, and temperature result in indirect associations of number and quantity and are therefore identified as indirect measurements.

Other concepts of this strand (that is, measurement) developed in the elementary school program are: all measurements are approximate; the unit

of measure determines the preciseness of the measurement; relative error—the ratio of greatest possible error to measure—determines whether one measurement is more accurate than another; and there are two systems of measurement in widespread use—the English and the metric systems.

Finally, the pupils are provided activitis that are designed to develop an awareness of the different quantitative physical objects or concepts to be measured such as liquids, solids, area, weight, time, and so on. Too, the pupils learn to select the appropriate standard unit dependent upon the system of measurement being employed.

As an example, consider a metric geometry concept: the perimeter or length of a polygon. Note that metric geometry differs from nonmetric geometry in that the former is concerned with measurement and the latter is not, save in the sense of congruency and similarity.

The pupil has acquired the concept that a polygon is the union of a given number of line segments; for example, $\triangle ABC = \overline{AB} \cup \overline{BC} \cup \overline{CA}$.
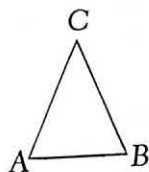
Also, the pupil has experienced selecting a unit of measure and measuring line segments as precisely as requested. Actually all that remains for developing the concept of perimeter is that one begin at a given vertex, end at the same vertex after completing the circuit, and the length of the polygon is called the perimeter. It is easy to see how this approach can be analogously used to develop the concepts of area and volume.

Algebra

In the elementary school the *mathematical sentence* is the aspect of algebra with which teachers are most concerned. Thus the discussion of this strand will center around the mathematical sentence. Its appearance in the elementary school program is an example of moving content downward in that attention to mathematical sentences has normally been reserved for the introductory course in algebra.

Since language is the primary means for the communication of ideas, a pupil should develop skills in using language to express ideas with clarity and precision. The language of mathematics is particularly suited to this purpose.

A mathematical sentence is a statement about numbers, points, sets, and so on. The usual parts of speech used in a mathematical sentence are: nouns—number, points, and sets; conjunctions—the operations; and verbs—the relations. Concisely, each mathematical sentence contains two or more names for numbers, points, or sets joined together by a relation symbol. For example,

$2 + 4 > 5$. Note that "$2 + 4$" and "5" are names for numbers and $>$ is a relation symbol meaning "greater than."

Statements in a language can be classified as true or false. Is this also the case with mathematical sentences which we have classified as statements about mathematical elements? Consider the mathematical sentence, "$12 + 9 = 20$" or "$6 \times 5 = 8 \times 4$." Is either true? Are they both true? Although the first is an inequality, it is true, while it is obvious the latter sentence is false.

An interesting situation arises when a mathematical sentence is expressed with an indicated unknown—an unknown element, operation, or relation. Each of the following is accepted as a mathematical sentence: $\square + 9 = 13$; $4 \times 4 \square = 17$; $5 \triangle 9 = 15 \times 3$; but as they are stated can the truth or falsity of each be determined? Mathematical sentences that are neither true nor false are labeled *open sentences*. Inversely then, sentences in which truth or falsity can be established are *closed sentences*. If he has not done so, the reader should note from this discussion on truth or falsity of mathematical sentences the interrelationship of this strand and the logic strand.

Open (mathematical) sentences are similar to incomplete crossword puzzles in their magnetism. That is, one is inclined to make the sentence true and therefore closed. For example, if an individual attended the sentence $\square \times 5 > 100 \div 4$, he would have difficulty in keeping his mind from inserting solutions that would make the sentence true.

Upon attending an open sentence in this way the observer discovers there is more than one solution, further he considers the limits within which he must think. That is, in this example, if the domain (or replacement set)— the set of numbers from which the solution may be taken—is the set of whole numbers, the solution set would differ from the solution set if the domain was the set of rational or real numbers.

By now the meaning of "solution set" is perhaps apparent, but for clarity's sake it is defined as "the set of all numbers that make an open sentence true." For example, if the replacement set for the above was the set of whole numbers, then the solution set would be the set of whole numbers greater than five: $\{6, 7, 8, \cdots\}$. Because the set of solutions make the sentence true, some writers refer to this set as the "truth set."

Mathematical sentences have been classified as open or closed and the closed sentences have then been categorized as true or false. It is also possible to classify mathematical sentences according to the indicated relation in the sentence (reecall that each mathematical sentence contains a relation). In the child's terms the relation is either balanced or unbalanced. Balanced relations are called "equations" and of course are symbolized by an equal sign. Unbalanced relations are therefore "inequations," commonly called "inequalities," and may be symbolized by any of the following: (Note that a slash negates the relation.)

	is not equal to	$\neq$
$>$	greater than	$\ngtr$
$\geq$	greater than or equal to	$\ngeq$
$<$	less than	$\nless$
$\leq$	less than or equal to	$\nleq$

The following are examples of activities in which pupils might participate when working with mathematical sentences:

1. Translate this work problem into a mathematical sentence: Lincoln school has 70 third-year pupils and University school has 28 third-year pupils. How many fewer pupils does University school have? Is there only one mathematical sentence you can make from this?

2. Label the following as true, false, or open mathematical sentences:

a. $3 \times 5 = 12.$

b. $(3 \times \square) + 4 = 19.$

c. $6 + 4 \leq 10.$

d. $\square + \triangle > 9.$

3. Translate each mathematical description into an English expression, then solve. The universe is the set of whole numbers.

a. $\{x \, / \, x = 7 - 4\}.$

Read as "The set of all x such that $x = 7 - 4$."

b. $\{\triangle \, / \, \triangle \neq 6\}.$

Read as "The set of all $\triangle$ such that $\triangle \neq 6$."

4. Solve these problems:

a. $(3 + 4) \times 2 = \square.$

b. $3 + (4 \times 2) = \square.$

c. $(\square \times 2) + 3 = 15.$

d. $(3 - 2) + (7 - 1) = \square.$

Examination of these activities shows that solutions were not requested for the first two activities. This is an important aspect of all of the new math. Such an approach destroys the traditional idea that a numerical answer is the only worthy objective in problem solving.

The alert teacher has, no doubt, identified many places where he can use the concepts of this strand to help pupils establish skills. Indeed, mathematical sentences, especially inequalities, can be used to provide novel and exciting activities for children. Contrast a page of work with inequalities with the objective of developing proficiency with multiplication facts to a page of vertically stated multiplication exercises in a traditional arithmetic workbook.

Also the alert teacher has noticed the interrelationship of this strand to all the others so far discussed. Therefore, it is easily seen why algebra (mathematical sentences) can be implicitly taught although not receiving primary emphasis in the elementary school mathematics program.

Functions

The function concept is a powerful idea that permeates most of mathematics and has many applications. In the elementary school, teachers should utilize every opportunity to provide a background of readiness experiences upon which the pupil can develop a correct understanding of the function concept. At this level the concept can be identified and probably named, since the ordinary usage of function in conversation is very close to mathematical usage of the term. For example, we say that the time it takes to drive from Dallas to Tulsa is a function of the speed at which we travel, or that wheat yield is a function of rainfall. By providing intuitive experiences, the way will be paved toward the mathematical concept of function as a set of ordered pairs in which no two pairs have the same first element.

The idea of a mathematical function has its beginning in the very basic experience of pairing, common in most primary programs. In the early beginnings of arithmetic, the child also learns to associate a number with a set of objects, and to count by pointing to the objects in sequence and pairing them with the set of ordered number words. He learns that counting is a way of determining what number is to be associated with a certain collection of objects; thus counting numbers may be considered a function of sets.

Possibilities of pairing situations are found in abundance throughout the elementary school. There are pairing of pupils and their ages, pupils and their names, time and temperature, cities and their populations, mountain peaks and their altitudes, and so on *ad infinitum*. The pairing of geometric figures with numbers, which occurs in measurement and mensuration, involves the function concept. A line segment, for example, can be paired with a number that denotes its length. All of these pairings are of the type that is basic to the idea of a function.

The introduction of simple formulas in the arithmetic program affords an opportunity for a deeper experience with the function concept. An equation such as $y = 3x$, can be used to determine a set of ordered pairs of the form (x,y). Some ordered pairs of whole numbers that are members of this set are $(1,3)$, $(2,6)$, $(3,9)$, and so on. The term "function" can now be applied to this set of ordered pairs. Since the equation $y = 3x$ was used in formulating this set, we speak of the function determined by the relation $y = 3x$.

Graphs and tables are effective ways of presenting functions. A start may be made by plotting functions that are sets of ordered pairs of whole numbers resulting in a dot graph. Line graphs of functions may be developed later, and the application and interpretation of these graphs may also be developed.

The function concept may be broadened to include mathematical operations. Pupils have encountered binary operations in learning the number facts although the terminology "binary operation" is probably new to them. Then basic addition facts, for example, describe the binary operation $+$ on the

set of whole numbers. Thus a binary operation on numbers, such as addition or multiplication, is a special way of pairing two numbers with one number.

From these several points of view one observes that functions may be described as sets of pairs, sets of points, tables, graphs, correspondences, or as mappings. In some instances the rule is emphasized; in others, the set. Historically these different aspects have received stress to a varying degree at different times. (That is, stress is a "function" of the era.) In the new math these views are not contradictory but unified since each view is accepted as a different way of talking about the same thing (sets of ordered pairs).

To illustrate the function strand more clearly, consideration will be given to the novel and useful bracket function. Professor David Page of the University of Illinois Arithmetic Project used this function to assist pupils in developing skill in estimation, and as he stated, "an intuitive appreciation for some other important mathematical subtleties."

In order to show its (the bracket function's) meaning the following examples are given.

$$[2\tfrac{1}{3}] = 2 \qquad [12\tfrac{3}{4}] = 12 \qquad [\tfrac{7}{5}] = 1$$
$$[4\tfrac{5}{2}] = 6 \qquad [8] = 8 \qquad [5.63] = 5$$
$$[\tfrac{2}{5}] = 0 \qquad [\tfrac{2}{5}\tfrac{4}{}] = 4 \qquad [\tfrac{9}{4}] = 2$$

The first example $[2\tfrac{1}{3}] = 2$ is read as "bracket of two and one third equals two." Formally, the mathematician would read it as "the greatest integer in two and one third is two." Notice how the bracket function affects the following:

$$[1\tfrac{1}{2} + 1\tfrac{1}{2}] = 3, \qquad [1\tfrac{1}{2}] + [1\tfrac{1}{2}] = 1 + 1 = 2.$$

The examples given thus far have been to develop the concept of the bracket function, but now look at the application of this function in estimation.

Three sixth-year pupils are collecting all the different arrangements—45 rpm recordings—of "There's No Business Like Show Business." If the first pupil has $1.75, the second $2.00, and the third $2.10, and the average price per record is $0.59, how many records can they buy at the present?

$$\left[\frac{1.75 + 2.00 + 2.10}{0.59} \right] = 9.$$

There are other applications of this function such as relating one's age and determining the amount of postage on first-class mail. However, the reader is perhaps convinced that this strand is an integral part of an elementary school mathematics program, but for the sake of emphasis the opening sentence of this section will be repeated. *The function concept is a powerful idea that permeates most of mathematics and has many applications.*

Problem Solving

This final strand is one that, although it is best taught implicitly and continuously through example, receives concentrated emphasis in the elementary school mathematics program. Emphatically, teaching pupils to solve their problems is a primary responsibility of the school.

Specifically, the mathematics program in the elementary school must be concerned with developing the child's skill in solving his everyday problems that are quantitative in nature. Further, attention is given to solving mathematical problems for the present and for the future. Finally it is imperative that pupils acquire an adequate mathematical background, which includes proficient problem-solving techniques, that can be used to build on when they are confronted with environmental or scientific—physical, biological, social, or technological—problems in the future.

From these remarks it is obvious that applications play a significant role in the new math programs. Applications are an essential part of the learning of mathematics in two ways. First, it is through applications that the pupil is introduced to many mathematical concepts, and his understanding of these concepts is deepened as he applies them to a variety of situations. Second, interest and motivation increase as the pupil sees widespread significant uses of mathematics.

Mathematics educators, then, have a responsibility to be concerned about the criteria for selection of problems and the identifiable stages of the problem-solving process. In brief, the problems chosen should involve a wide selection of fundamental mathematical principles in their study. Second, these problems should be closely related to or parallel to experiences that pupils have already had in order that pupils may be able to approach them. Lastly, the separate stages of the problem-solving and learning processes should be emphasized and re-emphasized as the problem is given further consideration.

Although there is no consensus on the stages or levels of problem solving, and there is even less agreement that pupils should be given a sequential step-by-step plan for solving problems, the following are listed and described as being among the more prominent and acceptable stages.

1. *Presentation.* Selection of the problem situation and how it is presented are factors that require the closest attention in preparing for the development of the thinking process.

2. *Attention.* The stage that follows the presentational level should provide further stimulation to the child's curiosity. It is here that the teacher can and should encourage an attitude of inquiry.

3. *Observation and exploration.* Here reference is made to a listing and examination of numerical and factual data that have been obtained from experiment and/or from calculations.

4. *Classification.* At this stage a better understanding of the solution of the problem may be attained by logically organizing observations.

5. *Further exploration.* At this point the problem solver may query himself about results if the problem's initial conditions are slightly modified.

6. *Formulation.* This is the period in which various conjectures are suggested.

7. *Generalization.* This level may appear in different forms as a function of the learner's experience, but teachers should ever encourage the pursuit of generalization.

8. *Verification and application.* A demonstrative or inductive mathematical proof of every generalization is desirable.

Certainly not every problem needs the depth and diversity of thought indicated by these stages, but there are those problems that are complex enough to warrant such an approach, hence the attempt to prepare pupils for reflective thinking. It must not be forgotten, however, that reaching the various levels of learning is a maturing process that cannot be hurried beyond the limits provided by nature.

Concluding comments on this strand are threefold. First, it is conceded that mathematics does not have a monopoly on the achievement of developing problem solvers, however it does have two unique contributions to make: many important problems in everyday life involve quantitative and geometric data, and mathematics provides a pattern for the mental activity required in problem solving. Second, there is the danger of becoming so involved in the details and the study of the application material that the development of mathematical understanding becomes subordinate. There is only a limited amount of time available for the study of mathematics in the elementary school. Therefore, a proper balance is needed between the time devoted to mathematics itself and to its applications. Third, the concern for problem solving is, in the final analysis, the same concern expressed by the Educational Policies Commission—the development of the rational powers of the individual.

THE PEDAGOGY OF ELEMENTARY SCHOOL MATHEMATICS

The term "pedagogy" may be defined as *systematized instruction* relating to principles and methods of teaching. It is used here instead of the more commonly used expressions such as "teaching procedures" and "instructional practices" to emphasize the notion that effective teaching in the area of elementary school mathematics requires systematized preparation on the part of the teacher.

A critical examination of experimental programs in mathematics for children reveals that these programs go far beyond the selection of new content. Several publications dealing with the new math have called attention to the

error involved in regarding the programs as merely the selection of new content. One of these publications states the problem as follows:

> Those who view mathematics for young children in these terms have missed the spirit and intent of the new programs. They view content and terminology as being synonymous with modern mathematics programs when in actuality these are but vehicles enabling young children to enter into experimentation, discovery and creativity.[5]

Another publication states:

> Enthusiasm and knowledge on the part of mathematicians have been important in the development of new programs. However, this same enthusiasm can be a weakness if it is not tempered and directed by persons with knowledge and experience in teaching pupils.[6]

Our society, as Chapter 4 has pointed out, is committed to the goal of fostering the maximum development of the powers of the individual. The school is the chief formal agency for achieving this objective. Hence, the school curriculum, including the mathematics program, must be designed to help pupils achieve this objective. A mathematics curriculum consisting of sound and meaningful mathematical concepts is not sufficient; pupils must learn to use these concepts in problem-solving situations.

Attention was focused in the preceding section on the content of the mathematics program in the elementary school, with a minimum of attention to teaching procedures. This section is concerned with the identification of significant features of the approach to instruction used in the modern mathematics program. Space is not available for detailed suggestions for directing learning activities in each of the content areas identified in the preceding section; the references listed at the close of this chapter, the teachers' manuals that accompany recently published series of mathematics texts for pupils, and in-service education programs in local school systems supply this need.

Concept Learning

One of the most striking features of the modern approach to teaching mathematics in elementary schools is the increasing emphasis on concept development. This emphasis is evident to anyone who has examined recent textbooks on the teaching of elementary mathematics, the publications of the National Council of Teachers of Mathematics, or other recent literature

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[5] Ronald C. Welch, "New Mathematics in the Primary Grades," in *Primary Education: Changing Dimensions* (Washington, D.C.: Association for Childhood Education International, 1965), p. 44.

[6] John L. Marks, C. Richard Purdy, and Lucien B. Kinney, *Teaching Elementary School Mathematics for Understanding* (second ed.; New York: McGraw-Hill, Inc., 1965), p. 11.

dealing with the subject. Nor is this trend confined to the area of mathematics: It is evident also in science, social studies, and other areas. It is not difficult to discover the rationale for the recent emphasis on concept development. One obvious reason lies in the explosion of knowledge in almost every field; knowledge in the field of mathematics is said to have doubled since the beginning of this century. Since it is not possible for pupils to acquire all the information available in the field of mathematics, the role of the teacher has become increasingly one of helping pupils develop the skills, understandings, and concepts that will enable them to become increasingly self-propelling during a lifetime of learning.

The twenty-fourth yearbook of the National Council of Teachers of Mathematics (1959) made an interesting effort to identify basic mathematical concepts and to illustrate how pupils can be helped to grow continuously in their understanding and use of these concepts from kindergarten through grade twelve. The chapter that presents a *flow chart* to illustrate this notion is titled "Promoting the Continuous Growth of Mathematical Concepts." The authors state thirty-two mathematical *ideas*, which they evidently regard as synonymous with *concepts*, and illustrate how pupils deal with these concepts at each of four educational levels: kindergarten through grade three, four through six, seven through nine, and ten through twelve. The authors explain, "Although the examples are grouped under four educational levels, there is no distinct line of demarcation among them. An example given for grades 7-9 might even be more appropriate for the superior child in grade 6." [7]

There can be no question about the importance of identifying the basic concepts that provide the common structure of the field of mathematics. This, however, is only the first step; the next step is to learn as much as possible about the process through which the concepts of mature mathematicians become the concepts of children—how children come to own concepts. Cognitive theorists have been giving increasing attention to this problem. Jerome S. Bruner, one of the most quoted of this group, says, "What is most important for teaching basic concepts is that the child be helped to pass progressively from concrete thinking to the utilization of more conceptually adequate modes of thought." [8]

Jean Piaget has conducted extensive experiments on how children form mathematical concepts. He says, for example, "At age seven, on the average, a child can build a strait fence consistently in any direction across the table, and he will check the straightness of the line by shutting one eye and sighting along it, as a gardener lines up bean poles. Here we have the essence of the projective concept; the line is still a topological line, but the child has

[7] Kenneth E. Brown, and others, "Promoting the Continuous Growth of Mathematical Concepts," in *The Growth of Mathematical Ideas: Grades K–12*, Twenty-fourth Yearbook (Washington, D.C.: National Council of Teachers of Mathematics, 1959), p. 480.

[8] Jerome S. Bruner, *The Process of Education* (Cambridge, Mass.: Harvard University Press, 1962), p. 38.

grasped that the projective relationship depends on the angle of vision, or point of view." [9]

There is evidence from research on concept formation that most children follow a somewhat similar pattern of sequential development in concept formation. Bruner, for example, identifies three stages. During the first stage, ending at ages five or six, the child is concerned with manipulating objects on an intuitive level, by trial and error rather than by taking thought. The second stage, which occurs after the child has entered school, is called the stage of concrete operations—getting data about the real world and organizing them so that they can be used selectively in the solution of problems. The third stage, which occurs between ages ten and fourteen, is called the formal operations stage—the child acquires the ability to operate on hypothetical propositions rather than being limited to what he has experienced or what is before him.

Although research indicates that most children follow a similar sequence in concept formation, it must be remembered that there is a wide range of difference in the rates at which individuals progress through this sequence. The following suggestion directed to intermediate-grade teachers applies as well to other levels of the school program:

> Expectations of every child learning the same thing at the same time must be modified. Flexible classroom organization and differentiated instruction and assignments must become part of the intermediate-grade teacher's thoughts and planning.[10]

The Structure of Mathematics and Readiness for Learning

Another significant feature of the instructional approach in elementary school mathematics is the increasing amount of attention given to the structure of the discipline. When pupils learn the structure of mathematics, they learn how its various phases are related and they begin to see that the study of any given topic is related to the total structure of mathematics. The importance of mathematical structure is emphasized in the following statement:

> It is easier to memorize words than nonsense syllables. It is easier to memorize numbers expressed with digits in a systematic pattern than in a random sequence. In like manner, learning in mathematics is accomplished most economically and effectively when the emphasis is on structure and on relationships and organization in what is learned.[11]

[9] Jean Piaget, "How Children Form Mathematical Concepts," in Richard C. Anderson and David P. Ausubel, *Readings in the Psychology of Cognition* (New York: Holt, Rinehart and Winston, Inc., 1965), p. 409.

[10] Ronald C. Welch, "Developing Rational Powers in Intermediate-Grade Mathematics," in *Intermediate Education: Changing Dimensions* (Washington, D.C.: Association for Childhood Education International, 1965), p. 55.

[11] Marks, Purdy, and Kinney, p. 50.

Attention has been called in previous chapters of this text to the absurdity of certain notions about readiness for learning such as (1) the child is ready to read at six years of age, (2) he is not ready for economics until he reaches high school or college, and (3) the study of fractions should be postponed until the fifth grade. Developments in learning theory add a new dimension to the study of readiness for learning—the structure of the subject. Gagné calls attention to this dimension as follows:

> The planning that precedes effective design for learning is a matter of specifying with some care what may be called the learning structure of any subject to be acquired. In order to determine what comes before what, the subject must be analyzed in terms of the types of learning involved in it.[12]

Experimental programs dealing with elementary school mathematics have caused a revision of notions about the inherent difficulty of topics and subjects; some children have been able to handle much more difficult material than had previously been supposed, when these materials were presented in a systematic and challenging manner. Burner has called attention to the futility of trying to assign specific content to certain age levels as follows:

> Precisely what kinds of materials should be used at what age with what effects is a subject for research—research of many kinds. . . . Nor need we wait for all the research findings to be in before proceeding, for a skillful teacher can also experiment by attempting to teach what seems to be intuitively right for children of different ages, correcting as he goes.[13]

Thus, recent evidence concerning how children learn tends to support the position taken throughout this text: The spiral plan of placement of content, the nongraded plan of elementary school organization, and other innovations are merely steps in the right direction, which make it more feasible for an intelligent teacher to take the pupil where he finds him and to provide individualized instruction and guidance that will assist the pupil to grow continuously in the directions intended by those who plan the instructional program. This most difficult of all instructional tasks must still be performed by individual teachers.

Discovery by Pupils

Another characteristic of the new mathematics programs is the emphasis on discovery methods. Referring to the work of the new curriculum projects that have grown up in America during recent years, Bruner stated:

> For whether one speaks to mathematicians or physicists or historians, one encounters repeatedly an expression of faith in the powerful effects that

[12] Robert M. Gagné, *The Conditions of Learning* (New York: Holt, Rinehart and Winston, Inc., 1965), p. 25.
[13] Bruner, p. 53.

come from permitting the student to put things together for himself, to be his own discoverer.[14]

When pupils are encouraged to discover principles and ideas for themselves, they appear to remember them longer, to relate them to other principles and ideas more readily, and to enjoy learning activities more.

It should not be assumed, however, that the discovery method has entirely replaced the expository method; the task that confronts the teacher is to determine the amount of emphasis to be given to each method. When the teaching style consists primarily of exposition, the teacher is manipulating the content, making decisions as to what comes next, and presenting the pupils with ready-made solutions to problems. The pupil is a listener; he has no active part in deciding how to put things together to arrive at a solution of a problem. A familiar criticism of this style of teaching is found in the statement, "Telling is not teaching." On the other hand, when the discovery method is used, the teacher and the pupil are in a cooperative position; the pupil is not a passive listener, but an active participant in manipulating content, in deciding what steps to take next, and in discovering solutions to problems. It is, no doubt, true that pupils profit from both these styles of teaching, but it is equally true that more opportunities need to be provided for pupils to learn by discovery.

The value of discovery by pupils has been recognized for many years by competent teachers and by specialists in learning theory. One reason for the wide recognition it is receiving today is the fact that our technological age requires more than mere mastery of mathematical information and skills; it requires the application of knowledge and skills to unsolved problems in industry, in government, and in family living. Although space is not available here for a detailed description of the discovery method, a few examples will serve to illustrate what it means.

EXAMPLE A   The kindergarten room contained several growing plants. Someone suggested that it would be interesting to find out (measure) how much these plants grow over a period of months. Instead of telling the pupils that they should use a ruler and record the height at different intervals, the teacher asked them to suggest how they could go about finding out what they wanted to know. One pupil suggested that a string could be used, another pupil suggested using a piece of paper, and finally one pupil suggested that a ruler be used. This example shows that there is a vast difference between being told how to solve a problem in measurement and being allowed to discover the solution.

EXAMPLE B   The teacher of a fourth-year class in mathematics wanted to use the discovery approach in teaching addition. The problem in the text

[14] Jerome S. Bruner, "The Act of Discovery," in Richard C. Anderson and David P. Ausubel, *Readings in the Psychology of Cognition* (New York: Holt, Rinehart and Winston, Inc., 1965, p. 607.

was, "If $8 + 8 = 16$, then $8 + 9 = \square$. The author of the text was aware that doubles are easier to learn and recall than other combinations, and was attempting to get pupils to use this more easily acquired fact in obtaining a more difficult fact. With this in mind, the teacher asked Tim to relate the order of his thinking in arriving at the sum of 17. Tim's response was, "Well, I thought $8 + 9 = 8 + (2 + 7) = 10 + 7 = 17$." Tim missed the mark completely according to the author's intent, but his answer was correct and his reasoning was sound. What does the teacher, using the discovery approach, do? He asks Tim, "Would it be possible to use $8 + 8 = 16$ to help you arrive at the sum of $8 + 9$?" Then he reinforces this by providing similar examples.

EXAMPLE C   During preceding sessions the class had been engaged in activities designed to teach the meaning of multiplication with whole numbers. The purpose of this session was to discover the properties of multiplication. The device used was the construction of a chart, using the reversed order of the elements.

×	9	8	7	6	5	4	3	2	1	0
9	81									
8	72	64								
7	63	56	49							
6	54	48	42	36						
5	45	40	35	30	25					
4	36	32	28	24	20	16				
3	27	24	21	18	15	12	9			
2	18	16	14	12	10	8	6	4		
1									1	
0										0

The diagonal was completed first, beginning with 9 times 9 and ending with 2 times 2. This was followed by computing the products below the diagonal through the 2 row. By this time most members of the class were becoming more confident because the task of finding products was becoming progressively easier. One pupil remarked, "Everyone knows that one 9 is 9." However, the teacher went step by step from 1 times 9 to 1 times 1, then asked the pupils to compare these products (in row 1) with the elements represented on the top of the grid. This they did without noticeable enthusiasm until Gary exclaimed, "Hey! One acts just like zero does in addition." Ann responded, "Yeah." Dick said, hesitatingly, "It does, doesn't it?" This was

the essence of pupil discovery; Gary had not only made a discovery; he had led others along with him. The discovery method helps pupils develop a sense of satisfaction in achievement and a fascination for the study of mathematics; it gives them experience with a way of working, a way of thinking, and an approach to problem solving.

Motivation for Learning

Motivation, in terms of the teaching-learning process, has at least two meanings: it may refer to the nature of the *motivated state* or it may refer to what the teacher does to motivate pupils.[15] An examination of recent publications in the field of learning theory reveals a tendency to view motivation in a less deterministic fashion than the classic view of stimulus-response psychologists. There is considerable evidence that the child does not merely respond automatically to stimuli from the environment; that his concept of self, his emotions, and particularly the goals that he has set for himself play an important part in motivation.[16]

Teachers have understood for many years that pupils will put forth more effort, organize their activities into more definite channels, and persist in their efforts longer when the activity is related to goals that they have set for themselves. The term "instruction" is used to denote the control of the external events in the learning situation. Gagné has stated, "These are the events that are manipulated by the teacher, the textbook writer, the designer of films or television lessons, the developer of self-instruction programs." [17] The modern program in mathematics is designed to assist teachers in manipulating the external events in the learning situation in such a fashion as to lead pupils to regard achievement in mathematics as something worthwhile for its own sake rather than as something to do to avoid punishment, to receive rewards, or to conform to the expectations of the teacher; it involves intrinsic rather than extrinsic motivation. Intrinsic motivation is in essence the same thing as learning by discovery. The pupil approaches the task as something to discover rather than as something to learn about; he approaches his learning activities with the attitude that his reward is in the discovery itself rather than in something external to the discovery.

Detailed suggestions concerning instructional practices that encourage pupils to work for real achievement in mathematics rather than for external rewards are found in recent textbooks on the teaching of mathematics in elementary schools, in teachers' manuals that accompany series of textbooks

[15] See John M. Stephens, *The Psychology of Classroom Teaching* (New York: Holt, Rinehart and Winston, Inc., 1965), Chapter 4.

[16] See Daniel A. Prescott, *The Child in the Educative Process* (New York: McGraw-Hill, Inc., 1957), p. 392; and Rudolf Dreikers, "Do Teachers Understand Children?," *School and Society*, February 28, 1959, pp. 88–90.

[17] Gagné, p. 215.

for pupils, and in recent publications dealing with the psychology of classroom teaching. Some principles that are generally emphasized are:

1. Each new mathematical concept or process is introduced in a way that causes it to be significant and interesting to the pupils.

2. Knowledge of progress is generally recognized as effective in motivating pupils. A test score or a program chart may be useful in this respect.

3. Pupils may be motivated to study abstract concepts by showing the application of these concepts to activities in daily life.

4. Pupils are generally motivated to study mathematical concepts when they have an opportunity to explore, to discover, and to verify hypotheses.

5. The need for recognition by their classmates may serve as motivation for some pupils; oral reports and the opportunity to display their work may provide the occasion for such recognition.

6. The order of concept formation is generally from concrete objects to semiconcrete representation to abstract ideas; taking objects apart and putting them together, using the number line, using the abacus, and using geometric models are useful in helping pupils understand mathematical structure.

7. The teacher may start with a situation with which pupils are already familiar and in which they are interested and extend this interest to mathematical processes; the topic of percent may be introduced by using their interest in seasonal athletics.

8. A wise use of encouragement or praise may be effective in motivating most pupils. People generally work better when it is known that someone has at least noticed their achievements. There is some research data that indicate that encouragement is a more effective motivational device than discouragement.

Practice in Learning Skills

The development of skills has always held a high priority in tasks involved in teaching mathematics. It would be a mistake to assume that recent emphasis on concept development and pupil discovery has meant that less attention has been given to the development of skills. The aims of the modern mathematics program have been stated as follows: development of concepts; development of mathematical understanding; development of skills; ability to solve problems; and development of appreciation and favorable attitudes.[18]

Research dealing with the learning process and experimentation in classrooms have, however, brought about changes in the prevailing concept of the nature of a skill and in methods of teaching skills. The mathematics program can become more effective when teachers understand certain principles that have emerged from research and experimentation:

[18] Marks, Purdy, and Kinney, pp. 33–37.

1. A skill is more than an automatic response; it is an organization of specific responses into patterns of behavior that are appropriate to a given situation. A skillful football player is not merely one who has mastered certain mechanical responses; he is one who can analyze each situation and decide what response is appropriate to that situation. Skill in mathematics involves more than knowing how to add, subtract, multiply, and divide; it involves how to use these processes in the solution of problems.

2. Understanding should come before practice. When a pupil has explored a process, when he understands when and why it is used, he sees the importance of practice and the practice is regarded as a means of achieving a purpose.

3. Pupils need guidance as they practice skills. If left entirely to themselves, pupils may merely reinforce wasteful or incorrect habits. The old adage that "practice makes perfect" applies only when pupils are practicing correct and economical methods of learning skills.

4. Practice should be based on diagnosis of individual status in the mastery of skills. It is wasteful to have the whole class practice on facts that all but a few have already learned. It is a relatively simple matter for the teacher to construct a chart, listing the facts to be learned across the top and the names of the pupils from top to bottom of a piece of paper, which will show at a glance what pupils have yet to learn what facts. This practice has the virtue of being diagnostic and individualized.

5. The systematic teaching of mathematical skills is essential. The notion that skills are learned most economically through use in meaningful situations should not be taken to mean that it is not necessary to set aside specific periods for practice on skills. Research has indicated that it is not feasible to teach mathematics effectively through an activity program alone.[19] Hence, many teachers who are by no means formal or traditional, take time out from work on units or other activities for direct and systematic practice on skills.

6. The development of mathematical skills is a continuous process; the degree of proficiency attained at one maturity level will not suffice for a later stage of development. Children differ so widely in rates of development that teachers at all levels must be prepared to provide individual guidance in the continuing development of skills.

7. The use of a variety of resources is essential to maintaining interest in practice; textbooks, workbooks, duplicated materials, games, and puzzles are among the resources frequently used.

Evaluating and Reporting Pupil Progress

The central purpose of evaluation is to determine the extent to which pupils are achieving the objectives of the mathematics program. Other pur-

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[19] Paul R. Hanna, *Opportunities for the Use of Arithmetic in an Activity Program* (Washington, D.C.: National Council of Teachers of Mathematics, 1935), pp. 85–120.

poses include providing a basis for planning learning activities, for the selection of instructional materials, for determining the effectiveness of the curriculum, for grouping pupils for instruction, and for reporting to parents. These purposes are achieved through the use of teacher observation, teacher-made tests, standardized tests, and other instruments and procedures. Reporting to parents on the progress of pupils in various subject-matter areas, although not required by law in any state, is almost universally practiced in elementary and secondary schools. The practice has one major objective: to promote more effective home–school cooperation in the interest of giving the child the best possible opportunities for learning.

A detailed treatment of purposes, procedures, and trends in evaluating and reporting pupil progress at this point would duplicate much of the content of Chapter 15. However, since more drastic changes have taken place in the mathematics program than in other areas of the elementary school curriculum, special problems relating specifically to this area need to be mentioned. Among these problems are:

1. Because subject matter readiness must be given serious consideration in the introduction of new topics and processes, the teacher needs to be familiar with the structure of mathematics in order to find out what activities are to be introduced next in promoting pupil progress.

2. Because the interest of pupils plays an important role in motivational readiness, the teacher must observe pupils closely to determine each pupil's degree of interest and attention and to decide upon those procedures which help to motivate each.

3. Because psychologists have thrown new light on the stages in concept development that children at various stages of maturity normally pursue, the teacher needs to be familiar with research in this area in order to be proficient in the evaluation of pupil progress in concept development.

4. Because the modern elementary school mathematics program is designed to encourage thinking on the part of the individual pupil, the teacher must be concerned with constructing test items and other evaluation procedures with this objective in mind rather than being content with tests that merely reveal simple recall of information.

5. A special problem in relation to the use of standardized tests has aroused considerable concern on the part of teachers and administrators, namely the extent to which available standardized tests are in harmony with the new content and objectives of the modern elementary school mathematics program. More precisely, the concern has been expressed in regard to the "content validity" of available standardized tests in the field of elementary school mathematics. Smith made a study of this problem by investigating the contents of state-adopted mathematics texts for the fourth, fifth, and sixth grades in Oklahoma and Texas in comparison with items contained in five

achievement test batteries most commonly used in these states. His study indicated that the over-all differences between the contents of the mathematics textbooks and mathematics achievement tests used in these two states were not substantial, but that there are certain areas in which they differed sufficiently to hinder their most effective use with the same pupils. These areas included geometry, the concepts of sets, and number systems with bases other than ten.[20] This would indicate that standardized tests will become more useful in the field of elementary school mathematics as soon as these tests are revised to conform more closely to the content and objectives of new programs.

Reporting to parents takes on additional importance in schools using the new content and procedures. Parents need a clear explanation of how the new program differs from the arithmetic that they took when they attended elementary school. This requires more in the area of home–school communication than merely sending out report cards periodically. It requires frequent meetings with groups of parents, clearly written pamphlets or bulletins explaining the program, and lists of books and articles written expressly for non-mathematical readers. The book by Evelyn Sharp, listed in the readings at the close of this chapter, is an example of materials that can be used to help parents gain a better understanding of the program.

SUMMARY

1. Societal changes that call for more mathematical competence, the explosion of knowledge in the field of mathematics, advances in learning theory, increased interest on the part of mathematicians in elementary and secondary school programs, and recent emphasis on developing the rational powers of children have contributed to drastic changes in the elementary school mathematics curriculum.

2. Experimental programs in elementary school mathematics, financed by the National Science Foundation and by private foundations have provided guide lines for commercial publishing companies, schools of education, and school systems concerning changes needed in content and methods of teaching.

3. The content of the modern elementary school mathematics program generally includes the following strands: number systems, geometry, measurement, problem solving, sets, logic, mathematical sentences, and functions and graphs.

4. The pedagogy of the elementary school mathematics program em-

[20] Lee A. Smith, "A Comparison of the Contents of State-Adopted Arithmetic Textbooks with Contents of the Arithmetic Sections of Selected Standardized Achievement Batteries" (Norman, Okla.: University of Oklahoma, unpublished doctoral dissertation, 1965).

phasizes concept development, the structure of mathematics, readiness for learning, discovery by pupils, intrinsic motivation, the development of skills in meaningful situations, and effective use of evaluation of pupil progress.

SELECTED READINGS

Bruner, Jerome S., *The Process of Education*. Cambridge, Mass.: Harvard University Press, 1962. The Preface gives a résumé of the Woods Hole Conference held on Cape Cod in 1959, sponsored by the National Academy of Science. The book grew out of the deliberations of the Conference and the correspondence that followed it. The central theme of the book is that school programs should emerge from the joint efforts of eminent scholars, wise and skillful teachers, and those trained in fields related to teaching and learning. The importance of structure, readiness for learning, intuitive and analytic thinking, motives for learning, and aids to teaching receive detailed treatment.

———, *On Knowing: Essays for the Lefthand*. Cambridge, Mass.: Harvard University Press, 1962. These essays on discovery and structure illuminate the spirit of the modern mathematics program.

Deans, E., *Elementary School Mathematics: New Directions*. Washington, D.C.: U.S. Government Printing Office, 1963. A brief treatment of the reasons for increased emphasis on mathematics; changes in content and method; and a summary of experimental projects.

Elam, Stanley (Ed.), *Education and the Structure of Knowledge*. Skokie, Ill.: Rand McNally & Company, 1964. This book deals with the educational implications of the structure of knowledge.

Ford, G. W., and Lawrence Pugno (Eds.), *The Structure of Knowledge and the Curriculum*. Skokie, Ill.: Rand McNally & Company, 1964. The sections on the structure of disciplines and structure of mathematics are particularly significant to students who are interested in the elementary school mathematics program.

The Growth of Mathematical Ideas: Grades K-12, Twenty-fourth Yearbook. Washington, D.C.: National Council of Teachers of Mathematics, 1959. Identifies basic mathematical understandings that should be continuously developed throughout the mathematics program; illustrates classroom procedures; suggests a sequence for the placement of topics within the over-all themes.

Heddens, James W., *Today's Mathematics: A Guide to Concepts and Methods in Elementary School Mathematics*. Chicago: Science Research Associates, Inc., 1964. This guide is designed to help the teacher understand mathematical concepts and their relationships, how these concepts are taught at a given maturity level, and how they are expanded and reinforced at successive levels.

Huey, J. Frances, *Teaching Primary Children*. New York: Holt, Rinehart and Winston, Inc., 1965. Chapter 10, "Developing Competencies in Mathematics: Concepts and Skills," contains a concise treatment of the modern mathematics program for the primary department.

Marks, John L., C. Richard Purdy, and Lucien B. Kinney, *Teaching Elementary School Mathematics for Understanding*. Rev. ed.; New York: McGraw-Hill,

Inc., 1965. A comprehensive treatment of the modern mathematics program for elementary schools; contains detailed treatment of topics to be taught, effective learning activities, and examples of lessons used by successful teachers.

Report of the Cambridge Conference on School Mathematics, *Goals for School Mathematics*. Boston: Houghton Mifflin Company, 1963. A bold proposal for overcoming the "lag" in educational practice. Most teachers are poorly prepared to comprehend the content of the proposed program, and are incapable of teaching it.

The Revolution in School Mathematics. Washington, D.C.: National Council of Teachers of Mathematics, 1961. This booklet is designed to explain the causes of the current revolution in mathematics, what has been done to implement the revolution, and what administrative decisions are involved for local school systems.

Sharp, Evelyn, *A Parent's Guide to the New Mathematics*. New York: E. P. Dutton & Co., Inc., 1964. An informative book, written expressly for parents, which explains the mysteries of the new mathematics being introduced to American children at all levels in the schools.

Swain, Robert L., and Eugene D. Nichols, *Understanding Arithmetic*. Rev. ed.; New York: Holt, Rinehart and Winston, Inc., 1965. This revised edition treats clearly and concisely the language and concepts of sets and provides a thorough treatment of the theory of arithmetic and nonmetric geometry.

Ward, Morgan, and Clarence E. Hardgrove, *Modern Elementary Mathematics*. Reading, Mass.: Addison-Wesley Publishing Company, Inc., 1963. Presents elementary mathematics organized in terms of set theory. Emphasizes the thinking processes involved.

Wooten, William, *SMSG: The Making of a Curriculum*. New Haven, Conn.: Yale University Press, 1965. Covers the history of the School Mathematics Study Group since the summer of 1958: the writing session at New Haven, Ann Arbor, and Boulder; the process of developing textbooks; the use of textbooks in schools; and the reactions of teachers and parents to the new program.

SELECTED FILMS

The following represents only a few of the films that are available on the subject of arithmetic. The teacher should consult the nearest distributor of audio-visual materials for suggestions regarding films and film strips.

PRIMARY GRADES

Addition Is Easy. An eleven-minute sound film, demonstrating methods of teaching addition. (Coronet Films—other Coronet films for the primary grades are *The Calendar, Let's Count, Let's Measure, Making Change for a Dollar, Subtraction Is Easy*, and *What Time Is It?*)

What Is Four? A twenty-minute sound film that pictorializes the differences between numbers. Illustrates the "4 family." (Young America Films)

Willie and the Mouse. An eleven-minute sound film showing the difference between the old and the new methods of teaching arithmetic. (Teaching Films Custodians)

INTERMEDIATE GRADES

Decimals Are Easy. An eleven-minute sound film, showing the meaning of decimals and their importance in daily living .(Coronet Films)

Division Is Easy. An eleven-minute sound film, showing why division is important, and what must be done to master it. (Coronet Films—other Coronet films for the intermediate grades are *Measurement, Multiplication Is Easy, The Story of Our Money System, Story of Weights and Measures,* and *We Discover Fractions*)

Individual Differences in Arithmetic. A twenty-minute sound film, illustrating techniques used to diagnose individual differences and difficulties that hinder pupils in the mastery of arithmetic. (Encyclopaedia Britannica Films—other Encyclopaedia Britannica Films dealing with arithmetic include *Meaning of Long Division* and *Meaning of Percentage*)

Photo Comment

THE NEW MATH

Adults walking into a classroom where a lesson in modern math is in progress may be mystified at the notation on the chalkboard and have difficulty following the oral work. But it is obvious that something very important is going on, not only in terms of the mathematical concepts children are learning, but also in terms of the training in mathematical thinking. As children work with the number line, they engage in a group of operations that enter into all logical thinking. They learn that one can combine two jumps on the line with three more jumps, to end up at five; that it is possible to arrive at five on the line by combining jumps of various lengths, and that one can reverse the operation and arrive back at the starting point. Combinativity, associativity, reversibility, and identity operations can all be illustrated with the number line. Activities with this device also help to develop in the child's thinking the relationship between geometry and number. Eventually pupils learn to locate a point in space by the use of an ordered pair of numbers.

Clear thinking is also encouraged by the insistence upon answers that will make a statement "true." Emphasis is not placed upon whether an answer is right or wrong, but whether it will make the statement true or false. Gradually children become aware of what it means to make "true" statements, and of what is involved in the nature of proof.

According to the doctrine of "mental discipline," certain subjects like mathematics and Latin were to be studied to make the student more logical in his thinking. This doctrine became unfashionable when Thorndike did his transfer of training experiments. However, it may well be that the "new math" can make a contribution to logical thinking, *provided its potentialities are maximized.*

Educational Services, Inc., Watertown, Massachusetts

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Problems and Projects

1. As Piaget has shown, the principle of conservation is only gradually acquired by the child. At the preoperational level, the child lacks conservation of quantity, length, area, and volume; he thinks, for example, that a change in the arrangement of objects changes the total quantity. It is important for first- and second-grade teachers to know whether their pupils are conserving or not, for without conservation the child has no notion of cardinality or set.

Following is a simple task that can be presented to children to assess their grasp of conservation of quantity. Present the task to two first-grade pupils. Have half of your class test middle-class children, while the other half tests in a lower socioeconomic group. Pool results by social class and compare.

CONSERVATION OF QUANTITY

Material

Eight paper cups, ten paper flowers in a basket.

Presentation

Arrange eight paper cups on the table so that there are two inches between them. The basket containing the flowers should be placed on the table in front of the child. Tell the child to imagine that the cups are vases, and that there is to be one flower in each vase.

Part I

"Take just enough flowers from the basket for each of the vases, no more and no less: one flower for each vase."

Do not let the child put the flowers into the cups. Direct him to place each flower in front of the paper cup.

Justification: "How did you decide ...?"

Part II

Put the flowers close together and leave the paper cups in place.

"Are there as many flowers as there are vases? Or are there more flowers, or are there more vases?"

Justification: "Why? How do you know that ...?"

Part III

The flowers are now separated, but the paper cups placed close together.

"Are there now as many flowers as there are vases? Or are there more flowers or are there more vases?"

Justification: "How do you know ...?"

2. As you found out from collecting data in problem 1, there are many first-grade children who deny that ten equals ten when physical correspondence between objects no longer exists. Suggest what a teacher might do to help children achieve conservation of quantity. Keep in mind, as you plan, Bruner's stages in concept acquisition, beginning with enactive followed by iconic, and then by symbolic (see p. 348).

3. In the normal course of development, children acquire the notion of "all" and "some" relationships by eight years of age. Conceivably the logic of such relationships can be understood at an earlier age, if the proper foundation for the concept is laid. However, if logical thinking is to be accelerated, the teacher must be aware of the difficulty young children meet in dealing with such relationships and take steps to overcome the difficulty. The teacher must know, for example, that the child finds it difficult to think that a boy is a boy and a girl is a girl, and that both are also children. Consequently, when asked whether there are more children or more boys in the room, he may say, "More boys because there aren't so many girls." He forgets that all of the pupils are children, while only some are boys, and that, logically, all is greater than some. He does not yet realize that one can belong to a subgroup and the total group at the same time.

Examine some of the new math materials for primary grades discussed in this chapter. Look to see whether the program takes into account the young child's difficulty with "all" and "some." Is the child prepared for these concepts, or merely tested on them? If there is no foundation laid, suggest some activities that might aid the development of all–some relationships.

4. In addition to helping pupils acquire an understanding of operations, the teacher also strives for speed and accuracy in computation. Not all pupils are successful in meeting this goal, as the following case illustrates.

Mike is a brighter-than-average pupil in the upper primary of Edgemont School. Edgemont believes in a policy of continuous progress, with children assigned to groups on the basis of reading level.

But Mike is slow in arithmetic. He has never mastered the addition, subtraction, and multiplication facts, and now his accelerated group is supposed to be learning multiplication by more than one digit. Mike is completely lost. His teacher says, "He is in the slowest group in arithmetic and I go very slowly with these pupils." However, although the teacher presents the new material slowly, it is still the same material he is giving to the rest of the class.

Mike's case represents what happens all too often in the elementary school. Along with a policy of nongrading, or of promoting pupils regularly regardless of achievement there goes a fixed body of content and skills in subjects like arithmetic to be mastered at each grade level. Consequently, a fourth-grade teacher may have pupils who do not know the basic number combinations but nevertheless will begin teaching division and justify it by

saying that he takes care of individual differences by grouping and by covering new material slowly. What he does in effect is to deny the principle of continuous growth.

What can be done to help the Mikes in our elementary schools? Should Mike be sent back to a low-level group to master some of the fundamentals he has missed, even though he is an excellent reader? Should his teacher give him extra work to do at home? Should his teacher give him some diagnostic tests to find out his weaknesses and then plan the instruction accordingly? What self-teaching devices might be used? Evaluate each one of these steps in terms of possible consequences to Mike.

Exploring the Natural Environment: Science

To science, pilot of industry, conqueror of disease,
multiplier of harvest, explorer of the universe,
revealer of nature's laws, eternal guide to truth.
—Inscription on the National Academy of Science

SCIENCE IN THE ELEMENTARY SCHOOL CURRICULUM

Science and technology present both the greatest promise and the most direful threat to man's survival and well-being. They can be used for raising the standard of living, reducing disease and illness, and enriching and prolonging human life. On the other hand, they can become the handmaidens of destruction, oppression, and brute force. The schools are expected to make contributions to the development of great scientists and to help all citizens understand the influence of science on their daily lives.

Although certain aspects of science have been taught in elementary schools for more than a century, the systematic effort to give the subject a definite place in the elementary school curriculum has been alive since 1940. Science books for children were written as early as 1750; it was not until 1932, however, that the first complete series of science textbooks for children was published. At least seventeen states published curriculum guides for elementary school science during the 1940s and the number of guides produced during 1951, 1952, and 1953 nearly doubled the output of the preceding three-year period.

Much has been written about the reasons why the study of science, particularly in terms of exploring the natural environment, has been slow in gaining a foothold in the instructional program of elementary schools. Caswell and Foshay, for example, have stated, "Study of the physical environment,

as we think of it today, is a recent social invention. Until recently, one did not study the physical environment; one studied Sciences." [1] People have thought of science as an area reserved for only the most highly trained; teachers have entered elementary schools with inadequate preparation in the area of science; and, until recently, college and university scholars have been more concerned with specializing in one particular branch of science than with the preparation of teachers for elementary schools.

Since 1957, a massive curriculum reform movement (see Chapter 16), motivated at least in part by the desire to use the schools as instruments for national survival, has centered attention on the content and procedures of the elementary school science program. Several projects, supported by funds from the federal government and private foundations, and using the talents of scientists, science educators, and curriculum workers deserve mention. The Commission on Current Curriculum Developments of the Association for Supervision and Curriculum Development has established liaison with national curriculum projects, kept curriculum workers informed about the contributions of these projects, and suggested guidelines for evaluating programs developed. [2]

National science projects at the elementary school level include:

1. The Elementary Science Study, Educational Services, Inc., Watertown, Massachusetts. Sample units are available for examination and tryout;

2. Project on Science Instruction in Elementary and Junior High Schools, National Science Foundation and American Association for the Advancement of Science, Washington, D.C. Scientists and science educators have developed working papers which suggest alternative programs in science;

3. The Science Manpower Project, Teachers College, Columbia University, New York, New York. The monograph, *Modern Elementary School Science*, can be useful in planning the over-all science program;

4. University of Illinois Elementary School Science Project, Department of Education, University of Illinois, Urbana, Illinois. An effort to identify content that astronomers consider basic to the subject and to organize and test teaching materials;

5. The Elementary School Science Project, Department of Mathematics, University of California, Berkeley, California. Units developed under the direction of various scientists and experimentation in public school classes have been the principal activities of this project;

6. Science Curriculum Improvement Study, Department of Physics, University of California, Berkeley, California. Lessons are designed to lead pupils

[1] Hollis L. Caswell, and Arthur W. Foshay, *Education in the Elementary School* (third ed.; New York: American Book Company, 1957), p. 165.

[2] Commission on Current Curriculum Developments, *Using Current Curriculum Developments* (Washington, D.C.: Association for Supervision and Curriculum Development, 1963).

to discover the significance of certain science concepts. The scope and sequence of the science program is to be determined by the structure of science, by the increasing maturity of pupils, and by the pupils' preconceptions.

Although each of these projects is somewhat unique, it is possible to identify some common characteristics: instead of trying to patch up existing courses, they offer a new approach to science teaching; instead of merely presenting known facts, they emphasize the processes by which new facts, principles, and techniques are developed; they have been more concerned with developing specific materials for teachers and pupils than with developing a total science program, and the materials developed for teachers and pupils are more concerned with the basic structural concepts of science than with the technological applications of science. The National Science Foundation, which sponsors many of these projects, does not recommend any specific text, course, or curriculum for elementary school science. "Decisions on what to teach remain, in the healthy American tradition, the exclusive responsibility of individual schools and teachers." [3]

CHILDREN AND SCIENCE

A great deal of research has been done on children's interests in science. Using these findings, the staff of the elementary school has an opportunity to develop a science program that utilizes some of the most universal and spontaneous drives of children. Some of the characteristics of children that need to be considered in planning the science program are discussed below.

1. *It is normal for a young child to investigate.* Young children like to investigate, to explore, to try to find out how things are put together and what makes things go. There is overwhelming evidence that curiosity and the urge to explore are powerful drives in children from the kindergarten through the sixth grade. The fact that children, as they grow older, seem to lose some of this enthusiasm for discovery is well known to teachers. There can be little doubt that the school's emphasis upon accepting the word of the teacher and the textbook accounts for a large part of this loss.

With these facts about the nature of the child in mind, the modern teacher of science in the elementary school is depending less upon facts about science presented through a textbook or through his own words. Instead he takes living plants and animals into the classroom for children to handle and observe and he takes children out of the classroom to observe the world of science.

2. *Children's questions reveal a wide range of interests.* From the child's point of view, there are no artificial divisions of science, such as biological

[3] Bowen C. Dees, *Science Course Improvement Projects* (Washington, D.C.: National Science Foundation, 1962), p. 1.

and physical. Children's questions in science cover a wide range of interests relating to astronomy, biology, chemistry, geology, and physics.[4] Hence, it is no longer necessary or advisable to confine the work in the lower grades to aspects of biological science. Continuity and balance in the curriculum can be attained by providing experiences in each of the broad scientific areas at each grade level. This procedure makes it possible to take advantage of strategic opportunities for learning in connection with children's questions that do not fit into any rigid system of grade placement of topics.

3. *Children should be encouraged to use imagination.* Teachers are generally aware of the imaginative nature of children's activities. Contrary to popular opinion, imagination is not unrelated to scientific thought. The development of many new and useful products has come about through imaginative thinking that advanced far beyond existing knowledge. Children, therefore, need to be encouraged to develop their imaginative impulses in formulating hypotheses to be tested later by observation and experiment. Dramatic play is used very effectively in the primary grades to help children understand the physical properties of things and to develop fundamental concepts about size, weight, time, and space.

4. *Children learn through cooperative planning.* The science program provides many opportunities for learning through cooperative planning. Many teachers have found through experience that children learn more rapidly and enjoy the process more when given an opportunity to participate in planning. Research in the field of child development also supports this principle.[5] The evidence is overwhelming that from almost any angle, including sheer learning efficiency, democratic classroom procedures are more productive of lasting results than autocratic, teacher-dominated procedures. West found, for example, that in a democratic atmosphere children readily assumed responsibility for group work in science, undertook voluntarily to perform out-of-school experimenting and reading, suggested new methods of doing things, and participated in numerous other ways.[6]

Democratic group procedures require a great deal of planning on the part of the teacher as well as a flexible class schedule that permits children to work together on a project for a longer block of time than is usually found in the traditional type of program.

5. *Children differ in rate of growth.* Many studies have shown the tremendous difference in rate of growth of children. Croxton reported that the

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[4] This fact has been substantiated by Craig in a study of 6806 questions asked by children. Gerald S. Craig, *Certain Techniques Used in Developing a Course of Study in Science for Horace Mann Elementary School* (New York: Bureau of Publications, Teachers College, Columbia University, 1927).

[5] K. Lewin, R. Lippitt, and R. W. White, "Patterns of Aggressive Behavior in Experimentally Created Social Climates," *Journal of Social Psychology*, May 1939, pp. 271–299.

[6] J. Y. West, *Techniques for Appraising Certain Observable Behavior of Children in Elementary Schools* (New York: Contributions to Education No. 728, Bureau of Publications, Teachers College, Columbia University, 1937).

ability to apply generalizations possessed by most ninth-grade pupils is something that even a few kindergarten children have attained.[7] Haupt showed that children at each grade level generalize in terms of their experience, and that the generalizations in the lower levels differ from those in the higher levels by being less complex.[8]

These facts relating to the difference in rate of growth of children, together with the facts previously presented concerning the wide distribution of the science interests of children, are taken into consideration in planning the sequence of science experiences. In general, these facts argue for the spiral system of grade placement rather than the ladder system and for valuation of pupil achievement in terms of the child's own pattern of growth instead of in terms of minimum grade standards.

6. *Children learn through many types of experience.* Science teaching in the elementary school offers many opportunities to capitalize on the natural tendency of children to be active. Such experiences as manipulating objects, collecting and constructing simple apparatus, caring for pets, raising plants, dramatizing, questioning, experimenting, and planning appeal to children far more than studying and reciting from a textbook. This is not to deny the value of good science books for children. Williams reported that children make varied and spontaneous uses of science books and that learning about science from books is for many a natural and enjoyable process.[9] Bergen reported that children commonly and spontaneously use books and other factual sources, in contrast to empirical sources. She points out, however, that children seem to recognize the appropriateness of observation and experimentation and probably get too little practice in using them, and that the teacher may influence the children's choice of sources of information by his own remarks and by arranging apparatus, books, and other materials in the classroom.[10] Greene found a considerable gain in the measurable factual learnings in science as a result of marionette plays and plays partly written by children themselves.[11]

Scott and Myers reported that many children have woefully vague and incorrect notions of terms they use rather glibly in their routine school work.[12]

[7] W. C. Croxton, "Pupil's Ability to Generalize," *School Science and Mathematics,* June 1936, pp. 627–634.

[8] G. W. Haupt, *An Experimental Application of a Philosophy of Science Teaching in an Elementary School* (New York: Contributions to Education No. 633, Bureau of Publications, Teachers College, Columbia University, 1935).

[9] A. M. Williams, *Children's Choices in Science Books* (New York: Child Development Monograph No. 27, Bureau of Publications, Teachers College, Columbia University, 1939).

[10] C. Bergen, *Some Sources of Children's Science Information* (New York: Contributions to Education No. 881, Bureau of Publications, Teachers College, Columbia University, 1943).

[11] R. A. Greene, *A Comparative Study of the Efficiency of Dramatic Methods in Teaching Science to Fifth-grade Children* (Ithaca, N.Y.: Cornell University Press, 1937).

[12] F. Scott and G. C. Myers, "Children's Empty and Erroneous Concepts of the Commonplace," *Journal of Educational Research,* November 1923, pp. 327–334.

One reason for these misconceptions is the practice of introducing children to abstract terms and symbols before they have had sufficient firsthand experience. The subject matter of science lends itself well to providing children with excellent opportunities to learn through doing.

7. *Science teaching should utilize pupil purposes.* Every teacher knows that learning is more rapid and more lasting, and has more valuable concomitants, when it is in line with pupil purposes. It is fortunate for the teacher of science that children come to school with an unusual assortment of purposes related to science. Some of these purposes may be narrow and trivial, and the teacher will need to stimulate worthier purposes or broaden those already held, but it is scarcely necessary to resort to artificial incentives in the field of elementary school science, since its objectives correspond to so imposing an array of children's interests and needs.

The science program should recognize the following basic needs of the child: the need to explore; the need for intellectual stimulation; the need to understand the physical world; the need to have outlets for his imaginative life; and the need to be recognized as an individual.

Social Need as a Guide for Developing the Science Program

Since the curriculum maker is concerned with the improvement of living, the science program must be closely geared to persistent problems of living. Many of these problems—especially those involving health, safety, conservation, and the elimination of superstitions and ignorant practices—require an understanding of scientific principles.

HEALTH   Probably the most important aspect of living that children can study is health. It is not only an important concern for the individual, but it enters into the study of such community problems as sewage disposal, water supply, the control of communicable diseases, and proper protection of the food supply. The study of state and national problems also involves attention to the problem of health, since the strength of the state and the nation depends upon the conservation of human resources.

SAFETY   It has been estimated by the National Safety Council that more lives were lost during every year of World War II as a result of preventable accidents than were lost on the battlefields. The problem is primarily an educational one, and science education can contribute much to its solution. An understanding of scientific principles is closely related to the prevention of fires, reckless driving, household injuries, and other safety hazards. The need for safety education represents an important area in contemporary living in which the developments of science need to be made available to children to help them to adjust to the environment in which they live.

To teach health and safety effectively, the teacher must turn to the science fields for the concepts and attitudes he wants children to acquire. The safe use of bicycles, for example, requires some knowledge of the concept of

friction; rules for riding the school bus are based partly upon the concept of inertia; knowing what to do when a person faints stems, in part, from an understanding of the concept of gravity. Bacteriology helps children to understand why they should stay home when they have an infectious disease; physics contributes to their safe operation of the seesaw. Without content drawn from science, the teaching of health and safety degenerates into the teaching of rules, the reasons for which are not clearly understood by children. And the scientific approach to health and safety is so persuasive as to promise significant changes in pupil behavior.[13]

THE ELIMINATION OF SUPERSTITIONS AND IGNORANT PRACTICES   In the past, science objectives have consisted largely of statements of specific facts to be learned from the study of science. Such objectives were frequently regarded as ends in themselves with little or no application to problems of living. Ample evidence that they did not function in the lives of children and youth is to be found in the persistence of superstitions and ignorant practices in an age when the findings of science are readily available.

Examples of superstitions that have persisted from one generation to another, largely because the application of scientific principles to problems of living has been neglected, include the belief that thunderstorms will sour milk, that a bee sting will cure rheumatism, that breaking a mirror will bring seven years of bad luck, and that some crops must be planted only when the moon is full.

Closely related to these superstitions are the implicit confidence that many people have in the efficacy of certain patent medicines, faith in many get-rich-quick schemes, and prejudices against race and color founded in part on ignorance of scientific facts and principles.

It is not the intention here to suggest that the teacher should take these superstitions up one by one and teach children that they are not based on scientific facts. There is too much danger that such a procedure may lead to a conflict between what the child is taught at home and what he learns at school. What is being suggested here is that science teaching that involves firsthand experiences, experimentation, and observation will help the child build his own defenses against superstitions, prejudices, and false beliefs.

Problem-Solving Behaviors

The problem-solving behaviors that children use as they work in science need special mention. Problem solving as a method is not new in the elementary school. Teachers have used this approach for years in teaching many different subjects. But it is particularly important in science teaching to keep children's curiosity alive; they must want to search for answers and to discover that finding out about things through the use of their own powers of obser-

[13] J. D. Barnard, Celia B. Stendler, and Benjamin Spock, *The Macmillan Science-Life Series* (teachers' ed.; New York: The Macmillan Company, 1962).

vation and thinking can be a very exciting experience. Teachers also want children to form the habit of hypothesizing, of searching for evidence, of evaluating evidence, and of arriving at generalizations and changing preconceived notions of what is truth when the evidence disproves their hypotheses.

Consider the children in a third grade, who had been growing their own plants on the window ledge for Mother's Day gifts. The problems arose as to how the plants might be kept on the ledge, yet protected from the heat of the afternoon sun. One boy suggested that each plant might be sheltered with a black paper hood; a second thought that green might be cooler. Some children suggested the remaining colors in the spectrum, while others thought color would make no difference. How to settle the question? The teacher might have said, "No, white will reflect more of the sun's rays and will be the coolest." In fact, there are times when the learnings growing out of pupil solution would be so trivial that such a statement would be the best procedure. But in this case the teacher recognized an excellent opportunity for problem solving and so she said, "How can we find out which color, if any, would be best to use?" The children suggested various ways to test their hypotheses and eventually an experiment was planned to measure the temperature under paper shelters of different color. When the evidence was in, the children generalized from their data. Then the teacher helped them to see that, when the evidence is reliable, they must be prepared to change their minds if need be.

OBJECTIVES OF THE SCIENCE PROGRAM

The present age is one of spectacular changes brought about by science and technology. The past fifteen years have witnessed more scientific and technological discoveries than had been witnessed in all previous recorded time. The achievement of many of our national goals, at home and abroad, depends upon a strong and growing science and technology. New insights into the processes of investigation, new knowledge in the various areas of science, new information concerning what pupils at given levels of development can learn, require a rethinking of the objectives of science in the elementary school. Science is included in the elementary school curriculum for the contributions it can make to the intelllectual, physical, social, and emotional development of children and for the contributions it can make to the achievement of our national goals. It can cause some pupils to want to share the excitement and satisfaction of a career in science; it can help all of them to comprehend the kind of world in which they live and to participate effectively in an increasing number of local and national decisions that require an understanding of science.

Curriculum guides for elementary school science and texts dealing with the teaching of science usually list many objectives of the science program.

The point of view emphasized in the previous paragraph suggests that the following goals should be included: an understanding that the achievement of our national goals, at home and abroad, depends upon the use of science and technology; an understanding of the methods of investigation used by scientists; an appreciation of the excitement and satisfaction involved in a career in science; an understanding of the contributions of science to the achievement of optimum physical health; preparation for effective participation in local and national decision making on issues that involve an understanding of scientific information and principles.

SCOPE AND SEQUENCE IN THE SCIENCE PROGRAM

A few decades ago the scope of the elementary school science program was determined by the broad areas of content that pupils were expected to study: living things, earth and universe, matter and energy, and so on. The trend in recent years has been toward the identification of basic generalizations relating to the various branches of science. These generalizations may be stated in a number of ways: (The list that follows is illustrative only.)

1. The Earth is only one part of the universe; the universe contains other planets, stars, and celestial bodies.

2. Men and other living things depend upon the Earth, its atmosphere, and the sun for their existence.

3. All objects are composed of matter; although matter can be changed, it cannot be created or destroyed by ordinary means.

4. All materials and organisms found on earth experience an evolutionary process of change with time.

5. Environmental factors usually determine the distribution and abundance of organisms.

6. Through a growing knowledge of science, man can devise methods of manipulating natural forces for the purpose of promoting health and well-being.

Planning the sequence of science experiences involves an understanding of child growth and development and the structure of the various science disciplines so that what pupils are expected to learn at a given time is based upon what they have already learned.[14] A scope and sequence chart is not intended to serve as an exact blueprint of what pupils are expected to learn. Most school systems, however, accept the responsibility for continuous study and planning of the over-all program, leaving teachers free to make adaptations in terms of individual differences among pupils.

[14] See Jerome S. Bruner, *The Process of Education* (Cambridge, Mass.: Harvard University Press, 1962), Chapter 3.

Continuous, Cooperative Study and Planning

The sequence of science experiences need not be either rigidly planned or completely planless. What is needed is continuous, cooperative planning by the local staff to keep the sequence of science experiences in harmony with the developmental needs of children. The sequence cannot be arrived at once and for all or at any given time. No school can borrow and use uncritically the sequence of science experiences used in another school. Rather, the leadership in the local school must provide, as the basis for planning the sequence of science experiences, opportunities for the study of the local environment and the characteristics and needs of the children living in that environment.

Continuity in Learning

In accordance with the psychological principle that learning represents growth rather than the mere accumulation of knowledge and skills, science experiences in the modern elementary school follow the spiral system of grade placement rather than the ladder system. This means that, instead of taking up one area, such as "living things," in one grade and completing it before going on to another area, such as "the Earth," in the next grade, attention is given to each area at all grade levels. These topics cannot be mastered once and for all at any one grade level. Instead, they must be planned so that the child moves gradually from what is familiar and concrete to what is remote and abstract; from what is simple to what is complex.

Beginning with Children Where They Are

All children do not grow at the same rate in understanding the various aspects of the environment. Because of differences in ability, interest, attitudes, and the availability of materials in his environment, one child may be far ahead of another in one aspect, such as weather, but far behind in another aspect, such as the stars. Furthermore, children's interests do not reflect any artificial boundaries, such as physical science and biological science. There is no advantage, therefore, in arbitrarily assigning problems relating to the biological sciences to one grade level and materials relating to the physical sciences to another. The interests of children furnish a better clue to grade placement of topics in the science program of the elementary school than any artificial allocation based on the fields of subject matter.

ESSENTIAL FEATURES OF AN EFFECTIVE SCIENCE PROGRAM

The effectiveness of the science program in an elementary school is determined, in the final analysis, by what the pupils actually experience. Do their day-by-day experiences actually help pupils to grow in the ability to understand and interpret the phenomena that occur in their physical and biological

environments? National science projects have received liberal financial support; they have been staffed with competent scientists and professional educators; and they have produced excellent materials and procedures for the science program in elementary schools. State and local school systems have provided curriculum guides, and a specific time has been set aside for science instruction in the school day. These developments represent merely excellent beginnings. The quality of children's actual science experiences in 85,000 public elementary schools in the nation can continue to improve only as school people and parents participate in defining the kind of science program they would like to have, in evaluating the current program, and in making specific plans for improving the program. The following analysis of an effective science program provides some guides for this procedure.

1. *Children's interests in science are identified and nurtured.* If science in the elementary school is not an exciting adventure for both teacher and pupil, the fault must lie in the approach to teaching, for surely there can be nothing inherently dull or uninteresting about exploring the physical and biological environment. When the child comes to school, he is interested in many aspects of the environment—in animals and plants, in butterflies and frogs, in the earth and the sky, in clouds and rain, in heat and cold, in light and darkness, in airplanes and rockets, and in countless other things related to the broad field of science. It is left largely to the teacher to determine whether the child's enthusiasm is dampened through formal, standardized procedures or kindled for this fascinating realm of discovery and exploration. If the teacher brings to the task an understanding of children, a broad understanding of science, and a willingness to let children observe, experiment, and read to find answers to their many questions, the science period can be a joyous quest not only for the pupils but for the teacher as well. Some of the most fruitful science activities grow out of the questions and problems raised by pupils.

2. *The teacher has a good background in basic science and in approaches to the teaching of science.* One of the weaknesses of science programs in elementary schools can be traced to inadequate preparation of teachers in the basic sciences. The adage "teach the child instead of the subject" does not make sense, for obviously one must teach the child something. The child's opportunities for learning science may be either restricted or enhanced by the teacher's background in the subject. Specialists in science education generally recommend that the prospective elementary school teacher take at least two years of science during the undergraduate college years. If prospective teachers are to learn the new content and procedures developed by the national science projects, they must, of course, be taught the new content and methods of inquiry by professors in liberal departments; more than two thirds of the courses taken by prospective elementary school teachers are taught by liberal-

arts professors. According to some reports, increasing numbers of high school graduates are entering college with a better grasp of the basic sciences and many of the most highly qualified college freshmen want to major in mathematics and science.[15] Perhaps, as high school courses in science improve and as college courses in science become more attractive to students, new teachers coming into elementary schools will have better backgrounds in the basic sciences.

Effective teaching in the elementary school, of course, involves a great deal more than having an adequate background in academic disciplines. (See Chapter 7.) The teacher must be resourceful in developing a variety of approaches to teaching and learning. Jacobson and Tannenbaum have stated this point emphatically:

> It is not enough to know the basic generalizations of science; the teacher must also provide a variety of ways that children can be helped to learn something about them. Professional courses in teaching elementary school science are designed to help teachers develop this resourcefulness.[16]

Another aspect of teacher preparation is that of preparing teachers already in the school system to handle the new content and procedures in science. Van Til has called attention to this problem as follows:

> Even the substantial help of the National Defense Education Act, which now amounts to $181,000,000 for the first five years to strengthen instruction in science, mathematics and modern foreign languages, could not provide sufficient summer offerings for all of the present teachers of the many separate subjects.[17]

In view of this discussion, it seems inevitable that for several years science will have to be taught in elementary schools by some teachers who have had inadequate preparation. Rather than depriving their pupils of instruction in science, these teachers can attend workshops and conferences and take courses dealing with the teaching of science; read articles in educational journals; use the teacher's manuals that go with the series of textbooks used in the schools; get help from a science teacher in the junior or senior high school; do some of the experiments suggested in curriculum guides for teaching science; and in other ways become better qualified.

3. *Direct teaching is supplemented by unified experiences.* Chapter 6 presented the point of view that curriculum organization should provide both for direct teaching of subjects and for unified experiences. The preceding section of this chapter suggested a scope and sequence for the direct-teaching

[15] See Martin Mayer, *Where, When, Why: Social Studies in American Schools* (New York: Harper & Row, Publishers, 1962), p. 164.

[16] Jacobson and Tannenbaum, p. 20.

[17] William Van Til, "In a Climate of Change," in Association for Supervision and Curriculum Development, *Role of Supervisor and Curriculum Director in a Climate of Change* (Washington, D.C.: The Association, 1965), p. 24.

phase of the science program. Many elementary schools provide a definite period in the daily schedule for instruction in science, but these schools may also provide opportunities for pupils to relate science to arithmetic, language arts, the social studies, art, music, and health while working on units that draw materials from many fields.

Aerospace education, for example, deals with significant aspects of the environment in which children have a compelling interest. How important is the air in which we live? What keeps an airplane up in the air? Why is weather so important to the flyer? At what point does outer space begin? Why does a man flying in space become weightless? How does a satellite overcome gravity? What information about the Earth can the orbit of a satellite give us? The search for answers to these and other questions has enriched the science program in many elementary schools, and has provided opportunities to relate science to other curriculum areas. Resource units and suggestions for teaching children about this important aspect of the environment are available from many sources, for instance:

> *Aviation Education Bibliography* (third ed.; Washington, D.C.: National Aviation Council, 1959);
> *Aviation Education and the Space Age* (Sacramento, Calif.: California State Department of Education, 1960);
> *Demonstration Aids for Aviation Education: Selected Activities for Elementary and Secondary Schools,* Civil Air Patrol, Bolling Air Force Base, 1957; also from this source, *Education—Aviation and the Space Age: A Handbook for the Modern Teacher;*
> H. E. Mehrens, *Navigation and the Weather,* Civil Air Patrol, Ellington Air Force Base, Texas.

4. *Teaching procedures emphasize learning by discovery.* Helping pupils learn to use the method of discovery requires a different conception of the role of facts in the educative process from that held by many teachers. The facts of science are important, but they are tools used in problem solving rather than ends in themselves. John Dewey recognized this years ago when he defined subject matter as anything that helped a child solve a problem. Science teaching in elementary schools has frequently been ineffective because (1) it emphasized "ready-made" answers, (2) it placed too much emphasis on the products of science and not enough emphasis on the processes and, (3) it did not provide enough opportunities for pupils to engage in investigative activities.

Renner has explained in some detail the method of discovery that is receiving so much attention in current curriculum projects.[18] He points out

[18] John W. Renner, "A Design for Science Education in the Elementary Schools of Oklahoma," in *The Elementary School in Oklahoma Today* (Oklahoma City, Okla.: Department of Elementary School Administrators, Oklahoma Education Association, 1963), pp. 64–68.

that, in the process of problem solving, teachers will arrive at the conclusion that telling is not teaching and that hearing is not learning. When the discovery method of teaching is used, the discussion method, the question-and-answer method and all other methods become subsidiary to the process of discovery. The most basic principle of the discovery method is that the child learns in terms of his observations and in terms of experiences that he has had. The teacher and the pupils work together to isolate and define the problems to be solved. Many of these problems may come from a curriculum bulletin that the school has provided; others may come from suggestions from pupils. Pupils are encouraged to state trial answers as to what the problem's solution might be; the formal term for this step is formulating an hypothesis. The teacher must, of course, refrain from imposing "ready-made" answers. Any trial answer to a problem must be tested; procedures must be devised through which pupils can make the necessary observations and measurements to prove or disprove their hunches. Each pupil must be allowed, in fact encouraged, to interpret the data as he sees them. Without this prerogative the pupil will accept (not necessarily learn) only what has been predetermined that he should learn. The teacher has, of course, the responsibility to see that erroneous ideas are not accepted. This frequently entails having the pupils repeat a given experiment or seek additional data that will lead them to form correct concepts.

The steps in the method of discovery, which have been fruitful in the work of outstanding scientists, are (1) identification and exploration of a problem, (2) statement of an hypothesis, (3) experimentation and gathering of data, (4) selection of a tentative solution, and (5) subjection of the tentative solution to the rigors of disproof. But the teacher must remember that no two minds function exactly alike; each pupil will arrive at his own "steps," and the teacher must not be alarmed if the pupil's steps differ from those of others.

Pupils must be encouraged to share their ideas with others; they will learn much from each other, and will frequently identify other problems that they would like to explore. The very nature of discovery learning is that it is self-perpetuating. The complexity of discovery learning will vary from one maturity level to another as pupils progress through the elementary school, but discovery learning is not confined to any maturity level; children have been learning by discovery from the day they were born. This method is so natural that pupils find it fun and teachers find it rewarding.

5. *The school provides adequate equipment and materials for teaching science.* The suggestions provided in Chapter 7 relating to resources for teaching and learning apply to the science program as well as to other curriculum areas. A central library and a qualified librarian are as essential for the science program as they are for other curriculum areas. Textbooks, reference books,

films, filmstrips, slides, radio and television programs, and programmed learning materials should be available. Some of these materials should be available in classrooms; others may be made available as needed from a science equipment center in the building. The school program should be flexible enough to permit classes to go on field trips to study scientific phenomena. Resource persons —veterinarians, electricians, scientists—should be invited to participate in the instructional program when their information and skills can make a contribution to the problem the pupils are studying.

Many useful materials for teaching science can be obtained free, if the teacher knows where to write for them.[19] Yet, as Renner points out, science requires equipment and equipment costs money. There must be a financial commitment to the program if it is to succeed. For the teacher to build the necessary equipment takes time—time that could be more efficiently spent in lesson preparation or in giving individual help to pupils. Mediocre equipment usually produces mediocre results.[20]

6. *Leadership for the improvement of the science program is provided by a science consultant.* The role of instructional leadership in curriculum improvement has been treated in Chapter 8. The new content and procedures that are being developed by national science projects and the rapid changes that are taking place as a result of developments in science and technology create a need for continuous revision of the science program in local school systems. Many school systems have found it desirable to place a science consultant in charge of program planning and in-service education. The science consultant has extensive preparation in the physical, biological, and earth sciences, in professional education, and in child growth and development. The consultant is well acquainted with outstanding science programs in other school systems and with techniques for involving principals and teachers in decision-making processes. He provides leadership in the development of a continuous series of science experiences for the school's kindergarten-through-grade-twelve program; in making certain that the program is consistent with the developmental characteristics of children; in the procurement and effective use of equipment and materials; in providing instruction through which pupils learn to use some of the broad generalizations of science to interpret phenomena in their environment and within themselves; and in assisting teachers with instructional problems. Through workshops, institutes, and cooperative evaluation, he helps administrators and teachers keep abreast of developments in elementary school science.

[19] Mary H. Saterstrom (Ed.), *Educators Guide to Free Science Materials* (fifth ed.; Randolph, Wis.: Educators Progress Service, 1964).

[20] John W. Renner, "The Utopia Elementary School Science Program," in *Utopia in the Elementary School* (Oklahoma City, Okla.: Department of Elementary School Administrators, Oklahoma Education Association, 1964), p. 33.

SCIENCE FOR GIFTED CHILDREN

It is a truism that the scientists of the future are in the schools today. It follows that the schools have a responsibility for identifying pupils who have exceptional talents for high-level work in science and for helping them develop their talents. It cannot be assumed that the objective of helping all children understand science precludes the possibility of providing special opportunities for gifted children.

Two general approaches can be used to identify gifted children: standardized tests and systematic observation. Intelligence tests, tests of special abilities, interest inventories, achievement tests, and personality tests are used in the identification program. Teachers can also observe a wide variety of talents as pupils engage in many kinds of activities in the classroom. French has listed twenty-one characteristics of gifted children that the teacher may find useful. These include: longer attention span, enjoyment of learning, learn to read more rapidly, recognize relationships, ask more questions, show originality and use unusual methods, and not easily discouraged.[21] Although intelligence is one factor in the ability to do high-level work in science, it is not the only factor. Getzels and Jackson have reported studies that raise serious questions about the tendency to use the term "gifted child" as synonymous with the term "child with a high IQ." [22] Techniques that the teacher can use to supplement information gained from standardized tests have been reported from many sources.[23] These include anecdotal records, tape recorders, and check sheets that reveal the extent and nature of pupil contributions.

The identification of pupils who have exceptional interests and abilities in science is, of course only the first step; differentiated assignments and activities must be provided for these pupils. Modifications are made in assignments, in resources used, in methods of attacking problems, and in classroom organization. Gifted pupils are encouraged to work on individual projects, to carry out experiments, and to report the results to the class. The school system provides in-service education programs, the services of a science consultant, and bulletins suggesting procedures for offering enriched opportunities for able and ambitious pupils.

The Denver (Colorado) public schools, for example, have developed a number of bulletins suggesting appropriate content and procedures for use in the education of gifted pupils. One of these bulletins provides suggestions for developing twenty-five projects in science to meet the needs of gifted

[21] Joseph L. French, *Educating the Gifted* (New York: Holt, Rinehart and Winston, Inc., 1959), Chapter 2; pp. 74–81.

[22] Jacob W. Getzels and Philip W. Jackson, "Educating for Creativity," in Ronald Gross and Judith Murphy, *The Revolution in the Schools* (New York: Harcourt, Brace & World, Inc., 1964), pp. 170–183.

[23] National Society for the Study of Education, *Rethinking Science Education* (Chicago: University of Chicago Press, 1960), pp. 144–149.

pupils in grades four, five, and six. The bulletins suggests procedures for using these "topics of study" when the entire class, or a large part of it, is gifted, and also for using them when only two or three gifted individuals are in the group.[24]

EVALUATION OF PUPIL PROGRESS

The philosophy of science teaching in the modern elementary school is shifting away from an approach that emphasizes only mastery of content to one that places considerable emphasis upon the development of scientific attitudes and methods. Similarly, the emphasis in evaluation of pupil progress in science is shifting away from the exact measurement of the mastery of content toward an effort to evaluate progress toward the achievement of the broader objectives of science education. A review of the objectives of science in the elementary school presented earlier in the chapter will reveal that evaluation in terms of these objectives is far more complicated than merely measuring the degree to which pupils have mastered the content in a given area. Factual knowledge as a basis for intelligent behavior is more important today than ever before, but evaluation in terms of the broader objectives of the science program involves not only an accumulation of data regarding the information pupils can recall but also procedures for evaluating growth in understanding, attitudes, and skills. Paper-and-pencil tests may suffice for measuring pupil progress in terms of factual knowledge, but the evaluation of pupil behavior in actual situations involves the use of other instruments and procedures.

The following procedures are commonly used to evaluate pupil progress in science:

Essay-Type Examinations

Essay-type tests have some value in the evaluation of science understanding in the upper grades. The questions should be simple, clear, and specific and should be designed to test the child's comprehension of principles and his ability to apply the information to actual situations.

Objective Tests

Teachers should be able to construct several types of objective tests designed to measure the ability to use knowledge in the solution of problems and to apply scientific principles to life situations.

Problem-Situation Tests

Problem-situation tests confront the pupil with an actual situation and expect him to decide upon an intelligent course of action in terms of the in-

[24] Department of Instruction, *A Program in Science for Gifted Pupils: Grades Four, Five and Six* (Denver, Colo.: Denver Public Schools, 1955).

formation provided. They are well adapted to the science program because they test the ability to evaluate data, to apply given facts to the solution of a problem, and to check judgments against evidence.

Observation of Pupil Behavior

More can be learned about the interests, attitudes, and behavior patterns of children through daily systematic observation than through paper-and-pencil tests. Teacher observation handled systematically in terms of clearly defined objectives can be very useful in evaluating the growth of children in the area of science. The methods of making systematic observation of pupils are discussed in Chapter 14.

Forms for recording observations of pupil behavior relating to the objectives of the science program are intended to provide answers to questions such as the following:

1. Is the child improving in his ability to attack a problem and solve it satisfactorily?

2. Is he becoming more capable of taking responsibility for carrying out plans?

3. Is he improving in his ability to approach a discussion with an open mind?

4. Is he critical of his own ideas and those of others?

5. Is he improving in the ability to withhold a decision until sufficient evidence has been obtained?

Other Methods of Evaluation

Samples of the child's work both at home and at school, self-rating scales, case studies, and interviews all have their place in a comprehensive program of evaluation.

SUMMARY

1. The schools are expected to make contributions to the development of great scientists and to helping all citizens understand the influence of science on their daily lives.

2. The study of science, in terms of exploring the natural environment, has been slow in gaining a foothold in the instructional program of the elementary school.

3. Several national projects, supported by funds from the federal government and from private foundations, have pointed the way to an improved science program for elementary schools.

4. Research on child development has provided new insights into how children learn science most effectively.

5. Science is included in the elementary school curriculum for the con-

tributions it can make to the growth and development of children and for the contributions it can make to the achievement of national goals.

6. The scope of the science program is determined by the identification of generalizations relating to the various branches of science; the sequence is determined by the nature of child development.

7. Science is taught most effectively in elementary schools when (1) children's interests in science are identified and nurtured, (2) the teacher has a good background in science and in methods of teaching it, (3) direct teaching is supplemented by unified experience, (4) children are taught the methods of science, (5) teaching procedures emphasize learning by discovery, (6) the school provides adequate equipment and materials for teachng science, and (7) leadership is provided by a science consultant.

8. Many school systems provide differentiated science programs for pupils with exceptional interests and abilities in science.

9. The evaluation of pupil progress in science involves a great deal more than finding out how much information pupils can recall; it involves procedures for evaluating, understanding, concept development, attitudes, and skills.

SELECTED READINGS

Association for Supervision and Curriculum Development, *Curriculum Materials.* Washington, D.C.: The Association, 1965. Lists fifteen general curriculum guides for science in kindergarten through grade twelve and fifty-six science guides for the elementary school produced by state and local school systems.

Blough, Glenn O., and Julius Schwartz, *Elementary Science and How to Teach It.* Third ed.; New York: Holt, Rinehart and Winston, Inc., 1964. Outlines the content to be taught in four important areas and gives suggestions for teaching each area.

Commission on Current Curriculum Developments, *Using Current Curriculum Developments.* Washington, D.C.: Association for Supervision and Curriculum Development, 1963. Chapter 7 characterizes the work of several national curriculum projects dealing with elementary school science.

Dees, Bowen C., *Science Course Improvement Projects.* Washington, D.C.: National Science Foundation, 1962. Characterizes the work of several elementary school science projects supported by NSF.

Ford, G. W., and Lawrence Pugno (Eds.), *The Structure of Knowledge and the Curriculum.* Skokie, Ill.: Rand McNally & Company, 1964. Explains the significance of the structure of the major disciplines for curriculum planners. Pages 31–49 deal with the structure of the natural sciences.

Jacobson, Willard J., and Harold E. Tannenbaum, *Modern Elementary School Science: A Recommended Sequence.* New York: Bureau of Publications, Teachers College, Columbia University, 1961. This Science Manpower Project monograph outlines the characteristics of an effective science program for elementary schools and suggests content and materials to be used.

Lewis, June E., and Irene C. Potter, *Teaching Science in the Elementary School.* Englewood Cliffs, N.J.: Prentice-Hall, Inc., 1961. Emphasizes techniques of problem solving and methods of helping children grasp vocabulary and develop scientific concepts.

National Society for the Study of Education, *Rethinking Science Education.* Chicago: University of Chicago Press, 1960. This yearbook affords dependable guidance in the interpretation of significant trends in science instruction.

Saterstrom, Mary H., *Educators Guide to Free Science Materials.* Fifth ed.; Randolph, Wis.: Educators Progress Service, 1964. Contains lists of films, filmstrips, slides, charts, bulletins, pamphlets, posters, and books that are available free.

SELECTED FILMS

There are literally hundreds of films that can be used to enrich science learning in elementary schools. The ones listed here are merely illustrative. The audio-visual department of the local school system, the state university or college nearest your school, or the state department of education can supply detailed lists and descriptions of science films.

PRIMARY GRADES

Ways to Learn. A thirteen-and-one-half-minute sound film, intended to introduce situations in which problem-solving skills are needed; introduces different ways of learning—observation, speculation, questioning, reasoning, reading. (United World Films)

Why We Need Air. A thirteen-and-one-half-minute sound film, explaining how we need the components of air to live; how life on earth would be as barren as on the moon if there were no air. (United World Films)

INTERMEDIATE GRADES

Adaptations of Plants and Animals. A thirteen-and-one-half-minute sound film, illustrating the adaptation of living things to the environment for food getting and for protection. (Coronet Films)

Causes of the Seasons. An eleven-minute sound film, illustrating the tilt of the Earth's axis, the rotation of the Earth on its axis, and the revolution of the Earth about the sun; the effect of these factors on comparative lengths of day and night and on changing seasons.

What Is Science? An eleven-minute sound film, presenting the "scientific method"—curiosity, observation, hypothesizing, testing the hypothesis, and arriving at a conclusion. (Coronet Films)

Work, Time and Power. A thirteen-and-one-half-minute sound film, explaining how man has made progress in bringing himself to the "power age"; defines power and explains how it is measured. (United World Films)

GENERAL

Karplus-Stendler Film Series on the Developmental Theory of Piaget: *Conservation Tasks* (Film 1) and *Logic* (Film 2). (Davidson Films)

Photo Comment

EXPERIMENTATION IN SCIENCE

When science first became part of the elementary curriculum, the major focus of the successful lesson was an experiment, which we might more properly call a demonstration. Children were captivated by these often quite dramatic demonstrations. For example, a peeled hard-boiled egg might be shown to sit on top of a milk bottle, and then removed while pressure in the bottle was reduced by burning paper; the egg was then replaced to be pushed with a resounding pop into the bottle by the greater pressure outside. Unfortunately, such demonstrations were demonstrations by the teacher, with children playing a passive role.

Demonstrations still have their place in science teaching, but more often the lesson includes pupil activity or experimentation which need not be dramatic to engage children's interest. One activity suggested for the fifth grade in connection with a study of properties of materials involves identifying objects hidden in boxes. Children discover as much as they can about the objects by manipulating the boxes in various ways. Since pupils are actively involved in discovery, this simple activity can yield a great deal of information about weight, volume, density, and other properties of objects.
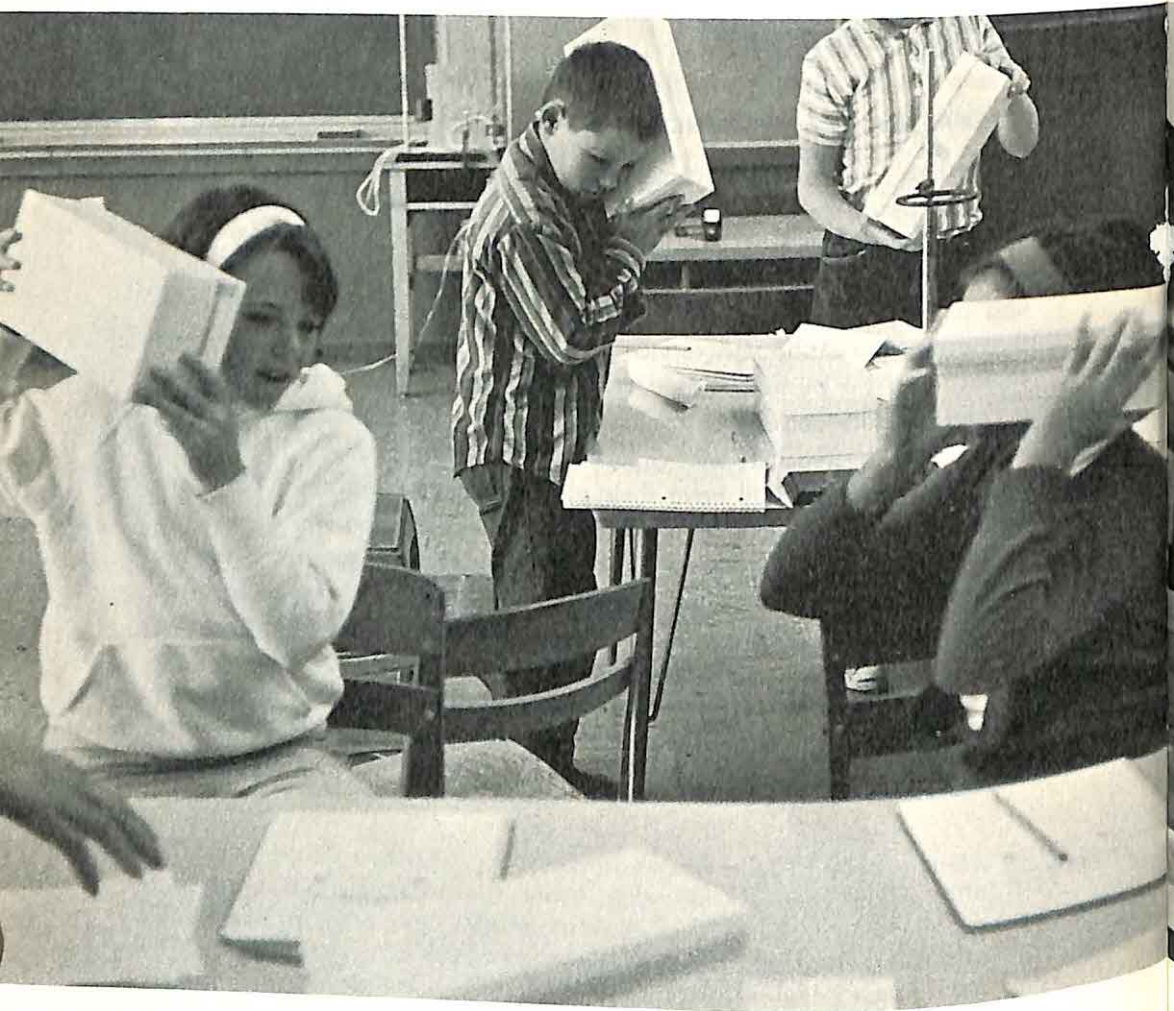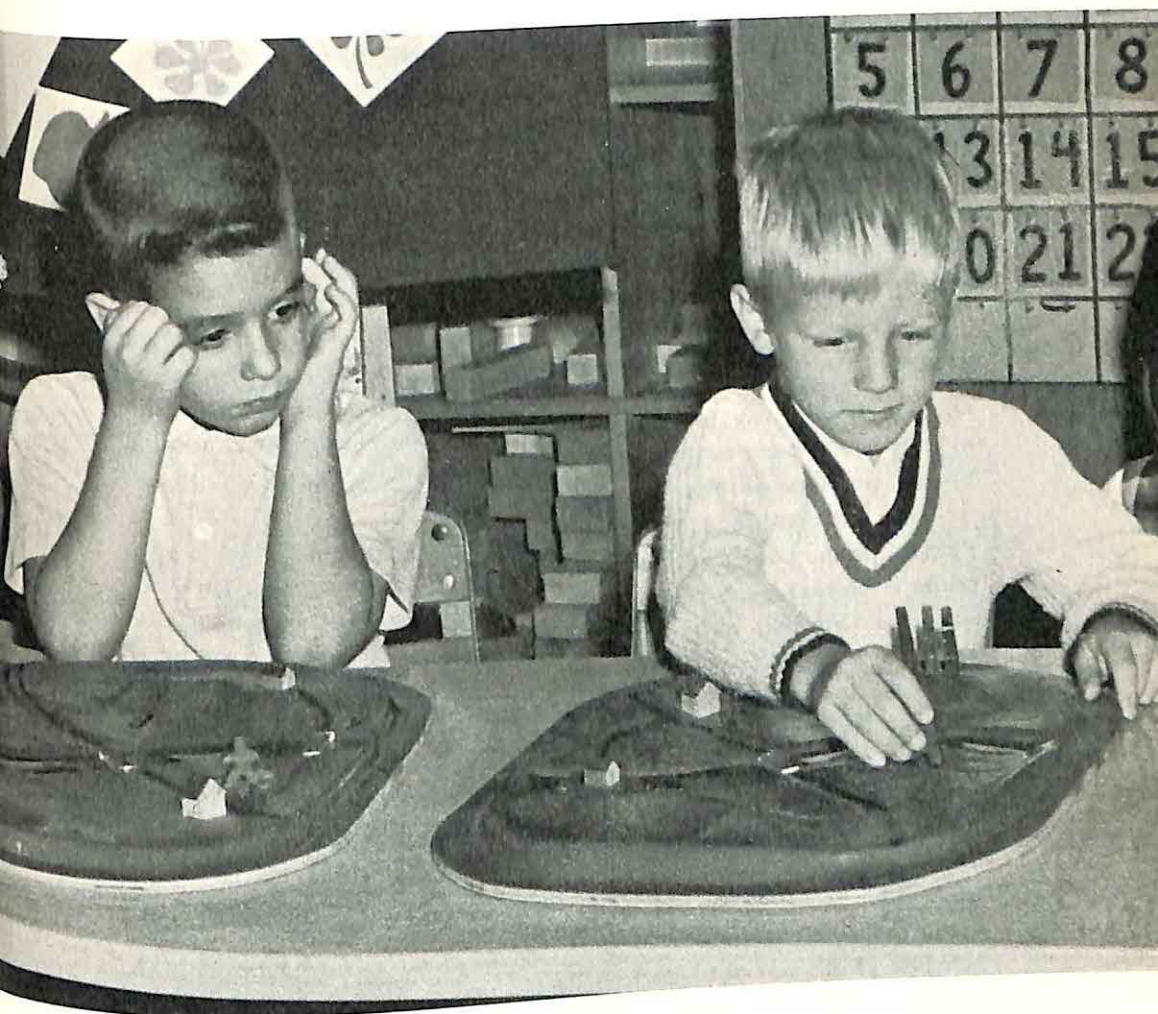
Photo Comment

COGNITIVE PROCESSES UNDERLYING SCIENCE CONCEPTS

According to Piaget, two kinds of mental operations are involved in acquiring knowledge—operations upon classes and operations upon relations between classes. These operations become possible with the development of mental structures as a result of self-activity. The photo on the previous page illustrates one kind of activity to foster development of structures to deal with relativity of position. Often in studying science the student must consider some interaction from a vantage point other than his own. In astronomy, for example, he must sometimes consider the motion of a heavenly body relative to the motion of another, not the Earth. In physics, problems of relative motion also occur.

The children in the photo work with two identical landscapes ("parks" to the poor and "golf courses" to the more affluent). Each landscape is crossed by a river and a road, and is dotted with trees and buildings. One child puts a "man" down on one landscape, and the other child must put his "man" in the same spot on the other model. Then one landscape is rotated 180 degrees. The first child puts his man in a different spot and the other child must put his man "in the same place in the park." Children can check their "answers" by rotating the model back to its original position.

Such an activity forces children to see relations between classes of objects in order to place the man correctly. Older children can identify the grid system found by the intersection of river and road, and use recognition of distinctive features of each quadrant as a cue. Practice with activities of this sort will help to build the notion of relativity that will facilitate acquisition of certain areas of knowledge in mathematics as well as science.

Problems and Projects

1. Scientists and educators are concerned that the modern science curriculum be based upon the structure of science. That is, content for children should be selected from and based upon key concepts or generalizations that form the backbone of science. Several national study groups have attempted to define the structure of science, and, interestingly enough, there is considerable unanimity with respect to the key concepts identified. One such group under the sponsorship of the National Science Teachers Association has tentatively identified seven conceptual schemes as constituting the structure of science. They are as follows:

   a. All matter is composed of units called fundamental particles; under certain conditions these particles can be transformed into energy and vice versa.
   b. Matter exists in the form of units that can be classified into hierarchies of organizational levels.
   c. The behavior of matter in the universe can be described on a statistical basis.
   d. Units of matter interact. The bases of all ordinary interactions are electromagnetic, gravitational, and nuclear.
   e. All interacting units of matter tend toward equilibrium states in which the energy content is a minimum and the energy distribution is most random. In the process of attaining equilibrium, energy transformations or matter–energy transformations occur. Nevertheless, the sum of energy and matter in the universe remains constant.
   f. One of the forms of energy is the motion of units of matter. Such motion is responsible for heat and temperature and the states of matter: solid, liquid, and gaseous.
   g. All matter exists in time and space and, since interactions occur among its units, matter is subject in some degree to changes in time. Such changes may occur at various rates and in various patterns.

The teachers manual for science textbook series typically lists the key concepts upon which that series is based. Examine any three series available in your curriculum laboratory. List the generalizations identified in each one. Do you find agreement with the list prepared by the NSTA committee? The wording, of course, need not correspond, but you should be able to identify common elements.

Are there some series where the structure is not described? If so, examine one of the texts to see if its subject matter is derived from the major conceptual

schemes listed above. Are key concepts readily identifiable in the text, or is the structure of science buried in extraneous details? Cite examples of educationally sound and unsound practices in your evaluation.

2. You may find the seventh of the key concepts previously stated in this fashion: Lawful change is characteristic of events in the material environment. Over millions of years the earth and living things on the earth have changed, and new forms have evolved. Examine several sets of science textbooks used in the elementary school. List by grade the topics that deal with this key generalization. Evaluate the sequence that your examination reveals. Do concepts become increasingly complex as the child progresses through the grades? Will he have a grasp of the concepts of adaptation and evolution as he leaves the elementary school?

3. Can you find examples of subject matter in your examination of the texts that violate the notion of basing subject matter upon the structure of science? Take the second conceptual scheme listed above, "Matter exists in the form of units that can be classified into hierarchies of organizational levels." One illustration of the grouping of units to form a hierarchy is the classification of plants and animals. Examine the science texts to see whether the classification system taught is a hierarchical one. Cite examples of how this is done.

You will find that some texts separate plants and animals into two groups—those useful and not useful to man—instead of using the scientist's way of classifying that you studied in biology. What is wrong with teaching such a classification system?

4. The work of Piaget has helped psychologists and educators to discover some of children's misconceptions that interfere with their acquisition of science knowledge. One of his experimental tasks reveals the child's confusion about weight of an object and the space that object occupies. Here are the directions for such a task. Administer the task to three fifth-grade children and record results. Pool data in class and plan experiences that might help a child abandon his erroneous way of thinking.

CONSERVATION OF VOLUME

Two jars three-fourths full of water.

Two metal cylinders identical in appearance but one much heavier than the other. (Two small metal containers in which film is purchased can be used, with one full of nickels or B-B shot, and the other half full of dimes.)

Procedure

Here we have two containers of water. Is the water the same level in each? And here are two spools. (The child is handed them; no mention is made

of the difference in weight, but it is apparent when the child holds the spools.)

Suppose we put this [the lighter one] in this jar. What will happen to the level of the water? (The child predicts how high up the water will go, and the level is marked with a rubber band.)

Now put the spool into the water. Were you right? (The rubber band is adjusted to the correct level.)

Suppose we put the other one into the other jar. How high up will the water go? Show me. (Typically and incorrectly the child indicates a higher level for the greater weight.)

Now let's put the spool into the water and see what happens. (Equality of level is noted.)

How would you explain that they are the same?

5. One of the newer emphases in elementary science teaching is the stress upon the relationship between science and mathematics. This does not mean the correlation of arithmetic and science in vogue years ago, but rather an emphasis upon using mathematics as the scientist does—as a tool for discovering truths about the universe. The essential difference between the practice of correlating arithmetic with science and the practice of using mathematics to discover basic principles is that the former is used to give the children practice in computation, whereas the latter is used to give children training in working as a scientist does. Under correlation, children might figure out the cost of materials needed to make an electromagnet. Such an activity contributes nothing to science, however, and little to arithmetic. On the other hand, when mathematics is used as a tool to discover basic principles, children count the number of coils in two wires of different lengths and then measure the weight of the object each electromagnet can pick up. This provides the kind of training important to scientists—and to other citizens as well.

Here are some science problems that are studied rather widely in the elementary school. Suggest an experiment to be conducted to solve each problem and show how mathematics can be used in connection with each activity to help children discover basic principles.

    a. Do people differ in their reaction time?

    b. Does it take longer to stop a bike that is going fast than one that is going slowly?

    c. Do layers of clothing keep one warmer than a single layer of heavy clothing?

    d. What happens to air when it is heated?

Healthful Living: Health and Physical Education

Good health is a state of physical, mental, and social well-being. It is more than merely the absence of disease or infirmity; it is the foundation for joyous, zestful living. The child with good health is happier, better adjusted socially, and able to do better work in school than the child whose health is poor. Thus, health is not primarily an end in itself but a means to more effective living and learning.

Mental and physical health are in reality only two aspects of the same thing. The child who has good health is the one who has an abundance of energy, whose body organs are functioning efficiently, who is mentally alert and emotionally stable, and who is able to bring all of his resources to bear upon the problems with which he is dealing. The school, therefore, cannot avoid being concerned about the child's health and about the factors that are influencing it if it is to be intelligent about educating the whole child. Our society has repeatedly affirmed its belief in the dignity and worth of the individual. The home, the school, and the community can do much to make this basic tenet of democracy a reality by providing adequate facilities for healthful living for all children.

OBJECTIVES OF THE SCHOOL HEALTH PROGRAM

School health programs are concerned with the general problem of conservation of human resources. It has long been recognized that good health is the principal source of individual happiness and national strength. The general objective of the health program in an elementary school is to help boys and girls become increasingly capable of making intelligent decisions about their own health problems and those of the community, state, and nation. Because every aspect of the school program influences the health of children, it is essential that every member of the staff understands the objectives of the school health program and assumes some responsibility for contributing to the achievement of these objectives.

The specific objectives of the health program will vary from one school to another, but the following list illustrates the type of objectives generally accepted:

1. To provide children with basic information that will help them conserve and improve their own health;

2. To help boys and girls in school to develop habits of healthful living that will enable them to maintain in later life that abundant vigor and vitality necessary for happiness and service in personal, family, and community life;

3. To help boys and girls learn how to protect themselves and others from communicable diseases;

4. To help children develop the ability to recognize quackery and nostrums in the field of health, to refrain from purchasing drugs or cures of unknown value, and to use dependable resources for medical care;

5. To teach the common rules for prevention of accidents and how to administer first aid when necessary;

6. To encourage children to take increasing responsibility for planning and eating meals that are adequate in every respect;

7. To teach how to plan a well-balanced daily schedule of work, play, rest, relaxation, and social activity;

8. To create a desire to participate in school and community efforts for health improvement;

9. To help children read selectively and understandingly in the field of health;

10. To help children accept their own limitations and capitalize on their strong points;

11. To help children understand the importance of correct posture, suitable clothing, and personal hygiene.

ESSENTIAL FEATURES OF A SCHOOL HEALTH PROGRAM

A satisfactory school health program includes a healthful school environment, adequate school health services, a functional program of health instruction, and a systematic program of physical education. The development of a unified school health program, involving all of these phases, requires a great deal of study and planning on the part of the school staff, local physicians, social workers, community health agencies, parents, and other interested citizens.

The organization, personnel, and administration of the school health program vary from one school system to another. However, certain features are common to most well-organized and well-administered programs:

1. The health program is closely geared to the health problems and resources of the community.

2. The school staff has a clear concept of the relation of health to the educative process.

3. Health instruction is not left to chance. A definite period is set aside for health instruction in class schedules, at least in the grades above the third, and health is integrated with other school subjects.

4. The physical plant of the school is planned, constructed, and maintained with a view to fostering healthful living.

5. Physical education is an integral part of the curriculum rather than merely an extracurricular activity.

6. There is proper coordination of the several phases of the health program. For example, health aspects of physical education are emphasized and immunization and physical examinations are utilized as educative experiences.

7. Adequate facilities and materials are provided for health and physical-education programs.

8. School health policies are definitely established and made available to the school staff and to parents.

9. There is effective coordination of school and community health programs.

10. Qualified medical advisers, nurses, health educators, school psychologists, and other specialized health personnel are provided either by the school system or in cooperation with city, county, or state agencies.

11. The school environment is free from accident and fire hazards, is sanitary, and is adaptable to pupil use.

12. The lunchroom is used as a laboratory for nutrition education, and not only as a place for dispensing food.

13. There are definite provisions for fostering the physical and mental health of employed personnel.

14. Teamwork on the part of school and community personnel permeates the health program.

15. Specialized health personnel are selected with due consideration for the adequacy of their training and other qualifications for the work.

A HEALTHFUL SCHOOL ENVIRONMENT

Education is a process of interaction involving the learner and his environment. The environment and the way the child responds to it from day to day determine the direction his growth will take. Because children are required by law to attend school, it should be a place designed to serve their legitimate needs. If the school environment is drab, unattractive, and unsanitary, the child's physical, social, and intellectual growth will be limited. The school cannot, of course, control all the environmental factors that affect the child, but it should make this portion of the child's universe as safe, sanitary, comfortable, attractive, and functional as possible.

Various phases of the school environment have already been discussed in Chapter 6. It is the purpose of this section to call attention to some important aspects of the physical environment in the elementary school.

The relationship between the physical plant of the school and the mental and physical health of its occupants is now widely recognized. The American Association of School Administrators has said, "Educational growth of children to the fullest potential cannot be achieved unless every aspect of the physical environment is so controlled that it contributes to the comfort and health of the pupils and professional staff." [1]

The School Site

The site should be centrally located with respect to the community served; should be free from heavy traffic, noise, and smoke; should be well drained; and should have attractive surroundings. The space should be ample for a modern school program—not less than five acres of ground, and preferably ten.

Functional Units

The Educational Policies Commission recommends that the maximum enrollment of an elementary school be 500 pupils. The functional units of a school plant to accommodate an enrollment of that size should include, in addition to classrooms, an administration unit consisting of the principal's office, a clothes closet, a lavatory, a reception room, a storage room, and a conference room. There should be a health unit consisting of office space for the physician and nurse and isolation and rest rooms for children. Other units that are needed include an auditorium large enough to accommodate the school personnel as well as visitors; a gymnasium equipped with shower rooms,

[1] American Association of School Administrators, *Health in Schools* (Washington, D.C.: National Education Association, 1951), p. 89.

locker rooms, and lavatories; a cafeteria; a library; a custodian's unit; a heating-and-ventilating unit; and adequate toilet rooms. It is recommended that class-rooms for the primary grades include toilets and lavatories and that toilets and lavatories for the other grades be sufficient in number and conveniently located.

Construction

Important considerations relating to the construction of the building include fireproofing, ventilation, heating, lighting, acoustics, and seating. Standards and check lists regarding these items can usually be obtained from the state department of education or the state health department.

The Modern Classroom

Classrooms in the elementary school building should be planned to fit the type of program to be carried on in them instead of making the program conform to the limitations of the classroom, as is frequently the case. It is desirable that all classrooms on the ground floor have exits directly to the play space. The modern elementary school program requires approximately thirty square feet of floor space per pupil; sixteen linear feet of chalkboard per classroom; and walls that are equipped with bulletin boards for display purposes. There should be ample storage space for instructional supplies, a vertical file and bookcases for the teacher, and bookshelves for pupils to use. Movable seat-and-desk combinations or posture chairs and tables provide satisfactory seating.[2]

Good Housekeeping

The teacher and pupils can do much to keep the classroom neat and attractive. Habits of using the wastebasket, of placing wraps and rubbers in the proper places, of eliminating many dust-collecting materials, of washing the hands before lunch, of maintaining proper room temperature, of keeping chalkboards clean and window shades adjusted properly—all these are important phases of good housekeeping. Pupils with impaired hearing or eyesight should be placed as favorably as possible in the room; seats should be arranged so that pupils get the best possible light; and artificial light should be used with care and intelligence. Pupils should be taught how to use drinking fountains safely, to keep everything in its place, and to clear their desks at the close of the school day.

[2] See the following references for more detailed suggestions in regard to buildings and classrooms: Department of Elementary School Principals, *Elementary School Buildings: Design for Learning* (Washington, D.C.: National Education Association, 1959); David C. Sanders, *Innovations in Elementary School Classroom Seating* (Austin, Tex.: University of Texas Press, 1958).

IMPROVING SCHOOL HEALTH SERVICES

Systematic observations of school children generally indicate that the longer children attend school, the more physical defects they develop. As they progress from grade to grade in the school, increasing percentages require glasses, suffer from hearing defects, and develop defective teeth. The same is true for neuroses, speech defects, and digestive and cardiac ailments. Dandruff, pimples, fallen arches, hernia, back pains, and athlete's foot seem to afflict more and more children and youth as they pass from junior high school into senior high school and college. Fortunately, some of these defects tend to disappear during or following late adolescence; others, if not discovered and corrected, continue indefinitely.

The extent to which the conditions and demands of the school are responsible for this increase in defects is not known. It is well known, however, that many schools do not provide an environment conducive to the conservation of vision. All too frequently the elementary school classroom, with its single, unshaded light bulb, its dingy walls covered with chalkboards, and its dark-topped desks, contributes to defective vision. There is considerable evidence that comfort and efficiency are fostered by good practices in school lighting, and there is no evidence to suggest that vision is impaired by work under good conditions such as those recommended by the National Society for the Prevention of Blindness.

One of the benefits claimed for universal military training is that it will provide an opportunity for the youth of the nation to be restored to a condition of fitness. School health programs should be designed to accomplish this purpose, but the fact is that the efforts made to date in many school systems fall far short of the mark when measured in terms of defects actually remedied. Facts revealed by many studies point to the need for more effective school health services. The following list, by no means inclusive, is sufficient to illustrate the need:

1. The White House Conference report in the early 1930s stated that 20 percent of all children had eye defects.[3] The 1950 report of the National Society for the Prevention of Blindness, citing a study made in the public schools of Saint Louis, Missouri, revealed that one out of four grade-school children examined was found to need eye care.[4] Nyswander pointed out that many cases of defective vision among school children are not known to teachers and other school officials.[5]

[3] White House Conference on Child Health and Protection, *Special Education: The Handicapped and Gifted* (New York: Appleton-Century-Crofts, 1932), pp. 126–127.
[4] *Let There Be Sight for All* (Washington, D.C.: National Society for the Prevention of Blindness, 1950).
[5] Dorothy B. Nyswander, *Solving School Health Problems* (New York: The Commonwealth Fund, 1942).

2. From 3 to 6 percent of all school children have hearing defects of sufficient severity to interfere with their progress in school. Teachers appear to be less aware of defective hearing than they are of defective vision, although deafness may have more serious effects upon normal school progress and social adjustment. Almost twice as many boys as girls suffer from impaired hearing.

3. Dental defects appear to be occurring among school children about six times as rapidly as they are being corrected. Dental defects accounted for one of every five rejections by the armed services during World War II. This is particularly disquieting when it is known that the minimum requirement was only six pairs of opposing teeth out of a total of fourteen pairs. For the men finally inducted, more than 1,400,000 bridges and dentures were made and 31 million cavities were filled.

4. *Public Health Reports* suggest that many of the defects of men rejected for military service could have been prevented.[6] Among the men who had been reared in five North Carolina orphanages, only 1.4 percent were rejected, whereas the rejection rate for the state as a whole was 44.6 percent. The difference is attributed to better pediatric and surgical care afforded the children in the orphanages as compared with that available to other children in the state. A study of young men from Hagerstown, Maryland, showed that defects of vision and dentation leading to rejection by the armed services had been recorded on school health records fifteen years prior to the rejection.

5. Recent efforts to provide compensatory educational opportunities for culturally deprived children have revealed that the health needs of these children have frequently been neglected.

Although authorities may not agree on the exact proportion of preventable defects occurring among school children, there seems to be general agreement that there is a need for effective school health services that begin in early childhood and provide for home-school-community cooperation in preventing defects and in correcting those that are remediable.

Purposes of School Health Services

School health services are provided through the cooperative efforts of the school, the local health department, parents, physicians, nurses, dentists, civic clubs, and other citizens of the community. These services are provided for the purpose of taking care of emergencies, preventing the spread of communicable diseases, discovering and correcting physical defects, and giving pupils and their parents the guidance they need in solving their own health problems.

Health services may be used as educative experiences for increasing the knowledge, improving the attitudes, and influencing the behavior of children in relation to health problems. For example, the teacher may take advantage

[6] Public Health Service, *Public Health Reports* (Washington, D.C.: U.S. Government Printing Office, 1951), p. 607.

of the immunization program to teach children how immunization helps the body build defenses against disease. The film *Defense against Invasion* may be used for this purpose. The teacher may also take advantage of the heightened interest manifested during epidemics and accidents to instruct pupils on what should and should not be done in such circumstances.

Types of School Health Services

The modern elementary school provides many types of health services. Some of the more important ones are discussed in the next several paragraphs.

CARE OF EMERGENCIES   It is the responsibility of the elementary school principal to see that the school has clearly defined programs relating to the care of emergencies, that teachers and children understand these programs, and that the programs are made effective when emergencies arise. In every school some accidents will happen and some children will have sudden illness. Teachers should know what procedures they are authorized to use in such cases. The children should also know these procedures so that their attempts to be helpful at times of accidents or sudden illness will not make matters worse and cause needless suffering.

The following policies are generally recognized as sound by competent educational and medical authorities:

1. The school staff, in cooperation with medical advisers, should prepare a written statement of procedures to be followed in cases of accidents or sudden illness.

2. There should be at least one staff member, who is well trained in first aid, present at all times.

3. The school should have an adequate supply of first-aid materials and first-aid manuals containing directions for their use.

4. Members of the school staff should not diagnose a condition and should administer medications only when prescribed by a physician.

5. Sick or injured children should not be sent home alone. Parents should be contacted immediately and asked to state to what physician, hospital, or home address the child should be taken.

6. If neither parent can be reached, the pupil's own family physician should be contacted. The pupil's permanent health record should contain the name, address, and telephone number of his family physician.

7. Members of the school staff should know what treatment facilities are available in the community and be prepared to help parents who are new in the community or who have no family physician to find these facilities. A list of the physicians and hospitals in the community should be posted in the principal's office, giving names, addresses, and telephone numbers.

8. If school physicians or nurses are available they will be expected to

take charge of emergencies, but their responsibility should be limited strictly to emergency care and should end when the parents place the child in the care of the family physician.

PREVENTION AND CONTROL OF COMMUNICABLE DISEASES   The school shares with the home and the community the responsibility for prevention and control of communicable diseases. Because children are required by law to attend school, because the incidence of communicable diseases is quite high among school-age children, and because many cases of such diseases are discovered while children are at school, it is obvious that the school has considerable, though by no means sole, responsibility for the prevention and control of such diseases. The principal responsibilities of the school in the control of communicable diseases consist of encouraging parents to make full use of immunizations and other preventive measures, conducting daily observations for symptoms of communicable diseases, seeing that children who are ill are not allowed to attend school, notifying parents when communicable diseases have occurred among the child's classmates, and protecting children against exposure to communicable diseases by providing sanitary buildings and adequate washroom facilities.

The policy of awarding certificates for perfect attendance—a policy encouraged by the distribution of state school funds on the basis of average daily attendance—sometimes hinders the efforts of the school to control the spread of communicable diseases. There are methods of motivating regular attendance that are less harmful to the health of the child and his classmates. Furthermore, experience has proved that the exclusion from school of children who show symptoms of the beginnings of communicable diseases or who are suffering from severe colds does less damage to attendance records in the long run than the spread of colds or diseases, which results in prolonged absences of more children.[7]

HEALTH GUIDANCE   The health guidance program is concerned with discovering the health needs and problems of children and with helping them and their parents find ways of meeting these needs. It is a means of promoting better cooperation among the home, the school, and the community for the purpose of protecting and improving the health of each child. Discovering the health needs of children involves such activities as the preschool roundup, developing a health history for each child, daily health inspection and screening by the teacher, dental examinations, medical examinations, and conferences with parents.

The preschool roundup program, which is usually conducted during the summer before the child enters school for the first time, has done much to make parents aware of the health needs of children. Where such programs

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[7] American Association of School Administrators, p. 329.

are conducted the child who enters school for the first time has had a medical examination and a dental examination and has been given the necessary vaccinations and immunizations. If he has any physical defects, such as impaired vision or hearing, the school is informed and can be prepared to alter the child's program to take care of these handicaps.

A dependable health history for each child provides invaluable information for the health guidance program. It will reveal whether or not the child is examined regularly by his family physician and dentist; what contagious diseases he has had; the dates of immunizations and vaccinations; environmental and hereditary health data; and habits relating to rest, play, sleep, and nutrition.

Daily observation by the teacher for the purpose of detecting signs of abnormality is an important source of information concerning the health needs of children. For example, a teacher discovered during the physical-education period that one girl had symptoms of curvature of the spinal column. She reported this observation to the parents, who then had the child examined by a bone specialist and found that the child needed regular and prolonged treatment to prevent her from becoming hopelessly deformed.

There has been a trend in recent years to de-emphasize the annual school health examination. This has resulted from the facts that medical, dental, and nursing personnel often do not have time for more than a hasty examination and that the records of the examination have frequently been filed but not followed up. Although the best school examination cannot replace examinations made by the family physician or dentist in his properly equipped office or clinic, many children do not have the services of either a family physician or dentist. It is therefore necessary that the schools provide for periodic examinations of these children either by school physicians or by public health personnel. Following the school health examination, the staff of the school should maintain contact with the parents to see that further diagnosis, correction, and treatment are carried out either by private physicians or by community health agencies.

HEALTH INSTRUCTION

The content, activities, and materials for health instruction should be planned as carefully as those for any other phase of the elementary school curriculum. Emphasis on healthful living as the primary objective of health education does not in any way minimize the importance of accurate information as a foundation for intelligent behavior. Suggestions relating to appropriate content, activities, and materials are included in the next main section that follows. Health instruction, like instruction in other curriculum areas, needs to take into account some of the crucial problems created by rapid

changes in our culture. Certainly, water pollution, air pollution, and recent evidence concerning the health hazards involved in smoking need special attention.

Water Pollution

We have about as much rainfall as we have ever had and we are building more and larger dams to impound water, but we have a shortage of clean water that threatens our health and impedes our economic growth. As our population increases we need more water; as more of us move to the cities and have higher standards of living, the demands for water increase (municipal demands for water are nearly eight times the 1900 level). Industrial use of water has increased eleven times since 1900, and irrigation uses 141 billion gallons a day compared to 22.2 billion gallons a day in 1900. Many of our people have more leisure time than ever before, more people enjoy water sports, increasing the demand for recreational water resources.

At the same time that our use of water is increasing, the wastes we dump into our water are also increasing: miles of stream are being lost each year to fishing and millions of fish are being killed because of waste products being dumped into streams; both the Gulf coast and the Atlantic coast have had epidemics of hepatitis because of polluted water; and water pollution continues to grow as more complex waste products are finding their way into our water supplies. "Used" water, which has been treated with chemicals and subjected to physical processes, is already an important source of water, but this process is expensive and the product is becoming poorer in quality.[8]

Many constructive efforts are being made to abate water pollution: federal grants to states and cities to build waste treatment facilities, legislation, research, and public information services. Children in elementary schools cannot, of course, make a major contribution to the solution of this health problem. They can, however, become aware of the extent of this hazard to their own health and of the measures that are being taken to meet the problem. The teacher can obtain useful material dealing with this problem from the Division of Water Supply and Pollution Control, Public Health Service, United States Department of Health, Education, and Welfare, Washington, D.C.

Air Pollution

Another serious health hazard that has been created by comparatively recent changes in our society is that of air pollution. Opinions differ on the health hazards involved in the fallout from nuclear testing; the situation is serious enough to be mentioned frequently by public officials as one of the reasons for such developments as the recent Test Ban Treaty.

[8] See Public Health Service Publication No. 958, *The Struggle for Clean Water* (Washington, D.C.: U.S. Government Printing Office, 1962).

The struggle for pure air to breathe increases as more people move to cities, as more automobiles are used, and as industrial production increases. Again, no one expects children in elementary schools to come up with a solution to the problem of air pollution; they can, however, become aware of the nature of this health problem and begin to comprehend the methods used to combat it.

Smoking

Another health hazard that has been receiving a great deal of attention in recent years is that of smoking, particularly cigarette smoking. Researchers have been trying for about thirty years to learn how smoking affects the human body; thousands of documents containing medical evidence have been produced. An advisory committee to the Surgeon General of the Public Health Service spent more than a year reviewing the evidence. Their conclusions were published in *Smoking and Health*, issued by the Public Health Service in January 1964. Outstanding conclusions of this Committee have been stated as follows:

1. Cigarette smoking is by far the most important cause of lung cancer in men.
2. Cigarette smoking also seems to be the most important cause of lung cancer in women, although much less research has been done among women smokers.
3. The longer a man smokes, and the more cigarettes he smokes daily, the greater the risk that he will develop lung cancer. He can cut down this risk by quitting cigarettes.
4. Cigarette smoking is the most important cause of chronic bronchitis, and cigarette smokers are more likely to die from chronic bronchitis than are nonsmokers.
5. There is a connection between cigarette smoking and emphysema (a serious lung disease). Cigarette smokers seem to face a greater risk of dying from emphysema.
6. Among men who smoke cigarettes, there is a higher proportion of deaths from coronary artery disease (heart disease) than there is among nonsmokers.[9]

Other sources estimate that death rates from lung cancer among men have increased more than seven times during the past twenty-five years; that of those now alive, 2,100,000 will die of the disease; and that cigarette smoking is also closely associated with other diseases such as peptic ulcers and cancer of the bladder.[10]

[9] Children's Bureau Publication No. 424, *Smoking, Health and You* (Washington, D.C.: U.S. Government Printing Office, 1964).
[10] Dean F. Davies, "The Black, Grey, and Brighter Sides of the Lung Cancer Story," *Public Health News* (Trenton, N.J.: State Department of Health), February 1963, pp. 52–55.

Much of the material about the hazards of smoking that is available to teachers applies to teenage children; indeed, parents are advised that the best time to begin teaching about smoking may be about the time the child is in the seventh grade. Opportunities exist, however, much earlier than this for building a factual background concerning the problem. Children can learn about the respiratory system—trachea, bronchial tubes, and lungs. They can learn about the heart and what functions it performs. They can study diseases and what happens to the heart and the lungs. It is generally agreed that teaching is more effective than preaching in relation to these health hazards.

Community Problems and Resources

The interests of children are related to the conditions existing in the local community. The health needs of children can be met only as the community, as well as the school, becomes a healthful place in which to live. An understanding of the health problems and resources of the community is, therefore, an indispensable part of curriculum planning. What are the leading causes of death in the community, county, and state? How are food-handling places regulated in the interests of health? What needs to be done about the city dump, street cleaning, public safety, and rats and mosquitoes? A community survey involving these and other items that influence health in the community should be made as a background for curriculum planning. Children in the elementary school can learn to work with parents and other interested citizens to improve community health conditions.

Cooperative Planning

The development of a functional program of health instruction involves cooperation between the school and the community. Even in small communities there are many organized groups, as well as individuals with specialized skills, that may be utilized in planning the program. Alert educational leadership will recognize that health is a cooperative enterprise and will develop procedures for bringing all available resources to bear on the health instruction program. The community health council provides the means for cooperative planning and action in many communities. These councils usually consist of representatives from the school administration, teachers, custodians, students, physicians, dentists, nurses, public health officials, and various lay organizations.

ORGANIZING THE PROGRAM

Just as there is a need for learning combinations in arithmetic and vocabulary in reading, so there is a need for building a factual basis for healthful living. This does not mean, however, that facts must always be learned by abstract drill or by reciting from a textbook during a period set aside for

health instruction alone. No single method of incorporating health instruction into the curriculum will suffice; the well-organized program will give proper emphasis to incidental teaching, to correlation with other curriculum areas, and to direct teaching.

Incidental Teaching

In the primary grades, health instruction consists largely in helping children live more healthfully each day and in making use of incidents as they arise in connection with school living to improve health practices and understanding. The alert teacher finds many opportunities for relating health instruction to such experiences as dental and medical examinations, immunizations, weighing and measuring, morning inspection, hand washing, playground activities, and the lunch period. Incidental teaching of health can continue to supplement direct teaching in the grades above the primary level.

Correlation with Other Curriculum Areas

Opportunities for developing understanding of health problems and influencing health behavior exist in many curriculum areas. Oral and written composition may well utilize content relating to health; arithmetic provides opportunities for such experiences as constructing height-and-weight charts and computing the caloric values of foods and the percentages of deaths caused by certain diseases; science provides opportunities for learning the principles of reproduction, growth, and survival; the social studies provide opportunities for studying about food, clothing, shelter, and other problems relating to health and safety in the home and community as well as in other countries; and music, art, and drama may well employ content from the area of health. In a school that is organized on the "self-contained-classroom" basis,[11] the teacher is in a very favorable position for taking advantage of opportunities for health teaching in connection with other school experiences. If the departmental organization is in use, a great deal of cooperative planning on the part of the school staff is necessary in order to avoid duplications and serious omissions in content and activities relating to health.

The Direct Teaching of Health

Since health is recognized as one of the most important objectives of education, it should be given at least as much time and attention as any other curriculum area. The teacher and administrator should see that whatever time is necessary for fostering the health of pupils is available and used. In many schools this problem is solved, in part at least, by setting aside a definite time in the daily schedule for health instruction so that it will not be neglected.

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[11] The "self-contained classroom" is a term used to describe a situation in which one teacher teaches all the subjects in contrast to a departmentalized organization in which one teacher teaches arithmetic, another teaches the language arts, and another, the social studies.

Appropriate Content and Activities

Health instruction in the elementary school usually centers around the development of understanding, attitudes, and behavior related to (1) personal hygiene, (2) nutrition, (3) communicable diseases, (4) sanitation, (5) rest and relaxation, (6) posture, (7) clothing, and (8) safety. The following outline is presented to illustrate appropriate content and activities in each of these areas. No effort has been made to assign specific topics to grade levels; obviously most of the topics will be given attention in each grade on varying levels of difficulty.

CARE OF THE BODY

1. Learning some of the elementary facts about the structure of the human body;
2. Learning the importance of bathing regularly;
3. Forming the habit of using only one's own towel;
4. Waiting at least one hour after eating before swimming or taking a bath;
5. Protecting the skin from sunburn;
6. Protecting the skin by proper dietary habits and by using adequate water and a mild soap;
7. Avoiding squeezing blackheads, boils, or pimples;
8. Keeping fingernails clean and neatly trimmed;
9. Coming to school with clean, well-brushed hair;
10. Learning to brush one's teeth in the proper manner twice a day;
11. Refraining from biting hard substances;
12. Understanding the need for regular dental checkups;
13. Understanding that excessive use of sweets is injurious to the teeth;
14. Forming the habit of washing the ears thoroughly and carefully;
15. Avoiding drafts and strong winds blowing into the ears;
16. Learning to recognize symptoms of ear trouble and going to a physician promptly when such symptoms appear;
17. Keeping the fingers away from the nose;
18. Using a clean handkerchief or piece of soft paper for nasal discharges;
19. Learning what kind of shoes are best for growing feet;
20. Reading with proper light, resting the eyes occasionally, and refraining from looking at the sun or bright lights;
21. Understanding the need for frequent examinations of the eyes.

PROPER FOODS

1. Making a chart showing the basic foods;
2. Knowing the foods that build strong teeth;
3. Learning how fresh foods should be washed and peeled;
4. Learning how extreme heat and cold affect the digestion;
5. Demonstrating the harmful effects of fried and highly seasoned foods;

6. Understanding the importance of proper mastication of foods;
7. Learning how cheerfulness and relaxation aid digestion;
8. Discussing the harmful effects of eating between meals;
9. Making charts showing proper foods for various weather conditions;
10. Planning a well-balanced breakfast, lunch, and dinner.

Contagious Diseases

1. Learning to drink from fountains properly;
2. Keeping pencils, fingers, and money out of the mouth;
3. Demonstrating the proper method of covering the mouth when coughing or sneezing;
4. Staying at home when one has a cold or other illness;
5. Keeping away from crowded places during an epidemic;
6. Seeing a film on immunization to learn its importance;
7. Learning how immunization helps the body fight diseases;
8. Learning the importance of safe water and milk sources;
9. Learning methods of protecting ourselves against flies.

Sanitation

1. Understanding what constitutes sanitary drinking facilities;
2. Demonstrating the proper way to wash, rinse, and dry hands;
3. Learning the most important community health laws;
4. Helping to maintain a clean and sanitary school, home, and community;
5. Taking part in community clean-up campaigns;
6. Making plans for helping to keep the home sanitary by washing dishes, caring for the refrigerator, keeping the kitchen clean, taking care of the bathroom, keeping the bedroom clean and orderly, cleaning and dusting, disposing of waste.

Rest, Sleep, and Relaxation

1. Getting 10–12 hours of sleep if the child is under eleven years old;
2. Forming the habit of taking regular rest periods during the day;
3. Planning play so that one does not become overfatigued;
4. Planning work, study, and recreation so that they do not interfere with getting the right amount of sleep;
5. Sleeping with lights out and in a comfortable position;
6. Using light, warm covers;
7. Demonstrating how sleep and rest are necessary for convalescence.

Posture

1. Choosing chairs of suitable size, sitting and standing erect, walking without scuffing one's feet, and refraining from putting hands into pockets;
2. Taking corrective exercises when prescribed;
3. Wearing appropriately fitted shoes and clothing;
4. Taking part in group games that develop muscles;
5. Dramatizing good posture, slouch, and stoop;

6. Avoiding hurry and overexcitement;
7. Guarding against fatigue;
8. Making surveys of what can be done to improve posture;
9. Learning the influence of posture on bones and organs;
10. Pointing the toes straight ahead when standing or walking.

CLOTHING

1. Learning the importance of wearing raincoat and rubbers during rainy weather;
2. Learning why clothes need to be washed, cleaned, and pressed;
3. Planning and selecting appropriate cloth for the season;
4. Making a scrapbook showing seasonal clothing;
5. Learning how cottons and linens permit air to pass through and perspiration to evaporate; how furs and woolens retain warmth;
6. Demonstrating how white or light-colored materials reflect the sun's rays, whereas black or dark colors absorb the rays;
7. Demonstrating the proper way to hang up hats, coats, and sweaters.

SAFETY

1. Telling one's own name, address, and telephone number;
2. Refraining from talking to or riding with strangers;
3. Refraining from playing in the street or on the highway;
4. Learning how to ride a bicycle safely, learning the city regulations about bicycles, learning to give traffic signals;
5. Demonstrating how to care for bicycles and how to ride them safely;
6. Knowing first-aid measures, including measures for hiccoughs, nosebleed, and what to do when a person catches on fire;
7. Crossing the street at corners, looking both ways, and obeying traffic signals;
8. Knowing safe practices in swimming and boating;
9. Distinguishing between safe and unsafe places and materials for play.

Materials and Methods Used in Health Instruction

Modern textbooks for use in the health-instruction program are available in increasing variety and improved quality. There can be little question that an elementary school should have available for use one or more of the excellent series of textbooks now on the market. They provide ideal reading material for children, suggestions for teachers relating to suitable content, and useful data relating to health problems. The textbook does not, however, constitute the only source of instructional material. Instructional materials should include printed materials, such as books, magazines, newspapers, and pamphlets; audio-visual resources, such as motion pictures, slides, graphs, models, posters, and charts; and environmental materials found in the home, school, and community.

The following criteria should be observed in the selection of materials for health instruction:

1. Materials should be scientifically sound.
2. Materials selected should provide for individual differences and needs.
3. Materials selected should provide for progression in activities and present opportunities for growth.
4. Materials selected should be closely related to experiences of children so that they will be meaningful.
5. Materials selected should have important content and not merely entertainment appeal.

Whether or not a period is set aside in the primary grades for health instruction, efforts should be made to direct the attention of teachers to the health opportunities and responsibilities related to their teaching. Methods of introducing health instruction into the curriculum in the primary grades include (1) using routine daily experiences, such as the morning inspection; the school lunch; rest periods; use of toilets, washbowls, and drinking fountains; examinations, immunizations, and play periods; and adaptation of clothing to weather conditions; (2) helping children explore and understand the health aspects of the environment by studying about milk, water, food, housing, clothing, pets, plants, industries, and transportation; and (3) using health readers and dramatic play. The extent to which each of these methods is used depends upon the needs of the group, the availability of materials, and the skill and understanding of the teacher.

Health instruction in the grades above the primary will continue to emphasize guidance in healthful living and in understanding the environment, making use of books, and dramatization. As the child grows older, he has more need for developing a factual background for healthful living, but the materials used should be closely related to his interests and needs. There is an increasing need for a variety of learning activities, including projects, problems, units, and other experiences in group planning.

PHYSICAL EDUCATION

The curriculum of the elementary school is not well rounded unless it provides for regularly scheduled classes in physical education, attended by all pupils. Physical education is an integral part of the elementary school curriculum rather than merely a series of exercise periods; it contributes to many of the most important objectives of education in a democratic society. Children are so constituted that they need an enormous amount of exercise for the normal development of muscles, circulation, respiration, and other bodily functions; their normal social development requires opportunities for developing recreational interests and skills and for learning to play with others, to

choose and respect leaders, and to follow the rules of the game. The monotonous, tense, and highly emotionalized work in which many people engage today, together with the increasing amount of leisure time available, make the development of recreational interests and skills a social necessity. The potential values of a good physical-education program for personality development and effective living should not be overlooked; there is no better way to establish easy and companionable human relations, develop friendships, and learn how to be both a good leader and a good follower than through a modern program of physical education.

Objectives of the Modern Physical-Education Program

During the past few decades, the objectives of physical education have been broadened to include the development of the entire personality of the pupil rather than merely to provide "physical training." Physical education contributes to health, strength, social living, and the development of enduring recreational interests and skills. These objectives may be stated more specifically as follows:

1. To aid in the development of strength, physical fitness, and organic power;

2. To provide a means of self-expression and to contribute to mental health;

3. To contribute to the social development of children by providing opportunities to play with other children;

4. To provide a means of relaxation from the more formal aspects of the school program;

5. To develop recreational interests and skills that can be used for wholesome leisure activities after school has been completed;

6. To provide opportunities for pleasure and satisfaction through the release of physical and emotional energy;

7. To develop habits of good sportsmanship that will help build character and good citizenship;

8. To develop the ability to appreciate rhythmics as a participant or a spectator.

The Interests and Needs of Children: A Basis for Physical Education

In the planning of the physical-education program the interests and needs of children of a given age level must be considered and the developmental status of each child must be determined. The teacher must begin with each child where he is, for a third-grade child may still be at the kindergarten level in neuromuscular development. Techniques available for determining the developmental status of children include observation, a study of health records, and conferences with parents, physicians, and nurses. A study of the

motor characteristics of children, such as that prepared by Gesell and Ilg,[12] provides suggestions for selecting appropriate activities for the physical education program.

Scope of the Physical-Education Program

The modern physical-education program includes many different types of activities to ensure that each child will have an opportunity to enjoy the feeling of satisfaction that results from participation in activities adapted to his needs and abilities. The following types are generally recognized as suitable for elementary school children:

FREE PLAY   For many years psychologists have been pointing out the value of dramatic play for sound emotional growth. For some children, play is a safety valve; they act out their hopes, their fears, their hostilities, and their aggressions as they engage in house or war or cowboy play or a similar activity. Kindergarten and primary teachers, recognizing the value of play, have attempted to provide the kinds of equipment and opportunities that would encourage this kind of play. In many classrooms there is a housekeeping corner equipped with doll bed, dolls, play stove, table and chairs, dishes, cupboards, dress-up clothes, and the like. A corner for block play, equipped with unit blocks and miniature airplanes, cars, trucks, and the like, also encourages good dramatic play.

During the time set aside for free play a small group may gather in this corner to dress themselves up and play at being father or mother, doctor or nurse. Five-year-old Richard, who feared the doctor, listened to the Teddy bear's heartbeat, took his temperature, and gave him a "shot" while the Teddy bear protested vigorously and the "doctor" reassured him. Playing the role of sick child gave Richard the opportunity to express his own fears and hostilities; playing the role of doctor helped to give Richard assurance that the discomfort would be momentary.

On the playground, children's undirected play may center around the equipment with which the yard is provided. Many schools are finding that the conventional swings, slide, and merry-go-round offer expensive and limited opportunities for play. A corner where children can dig, a knotted rope swinging from a tree, packing boxes and walking boards, a cargo net suspended from poles for climbing provide for good vigorous activity at minimum cost.

The seasonal games—hopscotch, jump rope, marbles, and the like— which are so much a part of children's culture, are an important part of play. These games provide children with the opportunity to practice the rudiments of social organization. They make up their rules, decide who is going to be

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[12] Arnold Gesell and Frances Ilg, *The Child from Five to Ten* (New York: Harper & Row, Publishers, 1945), p. 454; see also Department of Rural Education and American Association for Health, Physical Education, and Recreation, *Physical Education in Small Schools* (Washington, D.C.: National Education Association, 1948), pp. 15–20.

included or excluded, and enforce their decisions with firmness and finality. The good teacher will observe children carefully at such play and help them to make decisions that will not be cruel and unjust to anyone in the group.

TEAM GAMES   Team games are related principally to athletic sports, and, in order to prevent discouragement, children should be introduced to them gradually. In the grades above the fourth, boys should usually be separated from girls. These games involve rather complicated skills, for which considerable practice is necessary in order to raise the level of performance. They offer many natural situations for developing desirable character traits. Team games include softball, touch football, basketball, and circle soccer.

RHYTHMIC ACTIVITIES   It is highly desirable to have activities in which the child responds physically, mentally, and emotionally to music or rhythm. Basic rhythms call for movements involving the use of the large muscles and do not require a high degree of coordination. Careful selection of music suited to the activity and frequent opportunities to practice are essential. The ideas on which the movements are based should come from the children themselves and should be based on actual experiences the children have had. The aim is to evoke free expression from the children themselves rather than an imitation of the teacher's interpretation.

STUNTS, PYRAMIDS, AND APPARATUS ACTIVITIES   Stunts provide an excellent form of exercise, are easily organized, are economical of space and equipment, and are adaptable to many age levels. Pyramid building provides a place for everyone—including the very small child and the overweight child, who have difficulty in finding a place of importance in other games. Apparatus activities provide an opportunity for the development of certain groups of muscles that contribute to good posture.

CLASSROOM GAMES   Classroom games, such as "Farmer in the Dell" and "Did You Ever See a Lassie?" are usually played when the weather is not suitable for outdoor play, when space is not available for other activities, or when certain children cannot participate in the more vigorous activities. They help toward the accomplishment of the social, the recreational, and, to some extent, the skill objectives of the physical-education program.

Cooperative Planning of the Physical-Education Program

In the primary grades, physical education is usually taught by the classroom teacher with help, when possible, from supervisors with special preparation in physical education. A minimum of fifteen minutes in the morning and again in the afternoon, exclusive of recess periods, should be devoted to physical education. In the grades beginning with the fourth, one period of thirty minutes should be devoted to physical education daily under the direction of the classroom teacher or a teacher with special preparation in physical education. A curriculum guide, prepared through the cooperative efforts of administratos, supervisors, teachers, pupils, and parents, can provide sugges-

tions regarding appropriate activities, materials, plans for evaluation of progress, and suggestions for integrating physical education with other curriculum areas. It is desirable to have the same group plan both the health and the physical-education programs, because the two overlap at many points. Like other parts of the elementary school curriculum, the program in health and physical education requires continuous study, modification, and evaluation.

SUMMARY

1. Health is more than the absence of disease and infirmity; it is a positive quality of life that enables the individual to "live most and serve best."

2. Education for healthful living takes into account the total personality of the child and the total environment that is influencing his development.

3. By providing adequate opportunities for healthful living, the home, the school, and the community can do much to make the basic tenets of democracy a reality for every child.

4. An adequate school health program includes a healthful school environment, school health services, health instruction, and a physical-education program.

5. The present condition of the educational plant and equipment in many American communities constitutes a severe handicap to the school staff in the effort to meet the health needs of children.

6. School health services include provision for emergency care in cases of injuries and sudden illness, the control of communicable diseases, and health counseling.

7. Elementary schools can improve health instruction through a study of the health interests and needs of children, through surveys of community health problems and resources, and through cooperative planning.

8. The objectives of health education center around the improvement of health understanding, attitudes, and habits of children and adults in the community.

9. Health instruction may take the form of incidental teaching, correlation with other curriculum areas, and direct teaching of health during periods set aside specifically for that purpose.

10. Physical education should be regarded as an integral part of the elementary school curriculum rather than as merely an exercise period.

11. Physical education contributes to health, strength, social adjustment, and the development of lasting recreational interests and skills.

12. A study of the interest, needs, and developmental characteristics of children provides a basis for selecting activities appropriate for the physical-education program.

13. The physical-education program should include many types of activities to ensure that each child will have a chance to enjoy the feeling of satis-

faction that comes from participating in activities suited to his interests and needs.

14. All pupils should be expected to participate in the physical-education program; those who are unable to participate in the more vigorous forms of activity should be given the opportunity to engage in modified activities.

15. Administrators, teachers, pupils, and parents should engage in continuous evaluation of the program in health and physical education and in making plans for its improvement.

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SELECTED FILMS

The following represent only a few of the films available on health and physical education. The teacher should contact the film service in the local school system, the state university, or the state department of education for lists of films in these areas.

Alexander Learns Good Health. An eleven-minute sound film showing how Alexander improves his habits with proper diet, rest, cleanliness, exercise—and later pitches a winning game. (Coronet Films)

Bicycle Safety Skills. An eleven-minute sound film emphasizing performance techniques, traffic rules and procedures, and bicycle inspection practices that make for good cyclers today and good motorists tomorrow. (Coronet Films)

Dental Health: How and Why. An eleven-minute sound film showing the relation of diet to the growth and decay of teeth and the latest techniques of oral hygiene. (Coronet Films)

Foods that Build Good Health. An eleven-minute sound film showing the relation of good health to the foods we eat. (Coronet Films)

Learning about Our Bodies. An eleven-minute sound film designed to familiarize children with the basic structure of the human body and the position and function of major organs. (Coronet Films)

Physical Education for Primary Grades. A twenty-two-minute sound film showing methods and forms of physical education that encourage purposeful activity for children. (Iowa State University)

Physical Education Procedures for Elementary Schools. A twenty-two-minute sound film intended for use with teacher-training classes. (Iowa State University)

Schools for Tomorrow. A twenty-two-minute sound film dealing with the planning of school buildings. Shows how one community used citizen's advisory groups, school personnel, an architect, and a school building consultant to help plan their schools. (Wayne State University)

Simple Stunts. A ten-minute sound film that explains stunts and group activities requiring little or no equipment. Emphasizes safety. (Coronet Films)

Target: Tooth Decay. An eleven-minute sound film that emphasizes the importance of community cooperation in a dental program; encourages the formation of local committees to provide for fluoride treatment. (Educational Materials Center, University of Oklahoma)

Photo Comments

A NEW LOOK AT PLAYGROUNDS

In the rush to house America's exploding population of school children, thousands of new school buildings have been constructed. For the most part, their sites have been carefully planned so that play space is adequate. Until recently, however, equipment has been the traditional seesaws, swings, and horizontal bars. This photo is illustrative of a marked trend toward a different type of equipment, with forms suggestive of sculpture and so designed as to encourage creative play. The new equipment is also safer; heavy swings on long steel chains have given way to lighter yet even stronger materials.

The equipment illustrated is designed for children in the primary grades. Indeed, stationary pieces are rarely appropriate for pupils in grades above the third. In the past, teachers have relied upon group games—baseball, touch-football, volley-ball, and the like—as playground activities for older children. There is growing recognition, however, of the fact that individual sports as well as team sports have a place in the physical education curriculum. Boys and girls growing up in America today will mature in an age of automation, where more and more processes will be carried on without benefit of manpower, and where the work week will be appreciably shortened. There will be more time for recreation and more need for vigorous physical activity to counteract the effects of sedentary living. Even with limited resources, teachers can help build in pupils an interest in games and sports that do not require large numbers of participants. Horseshoes, bowls, sand piles for broad-jumping, and a short track for running are not difficult to provide and are suggestive of a more diversified approach to the physical-education program than the traditional group games.

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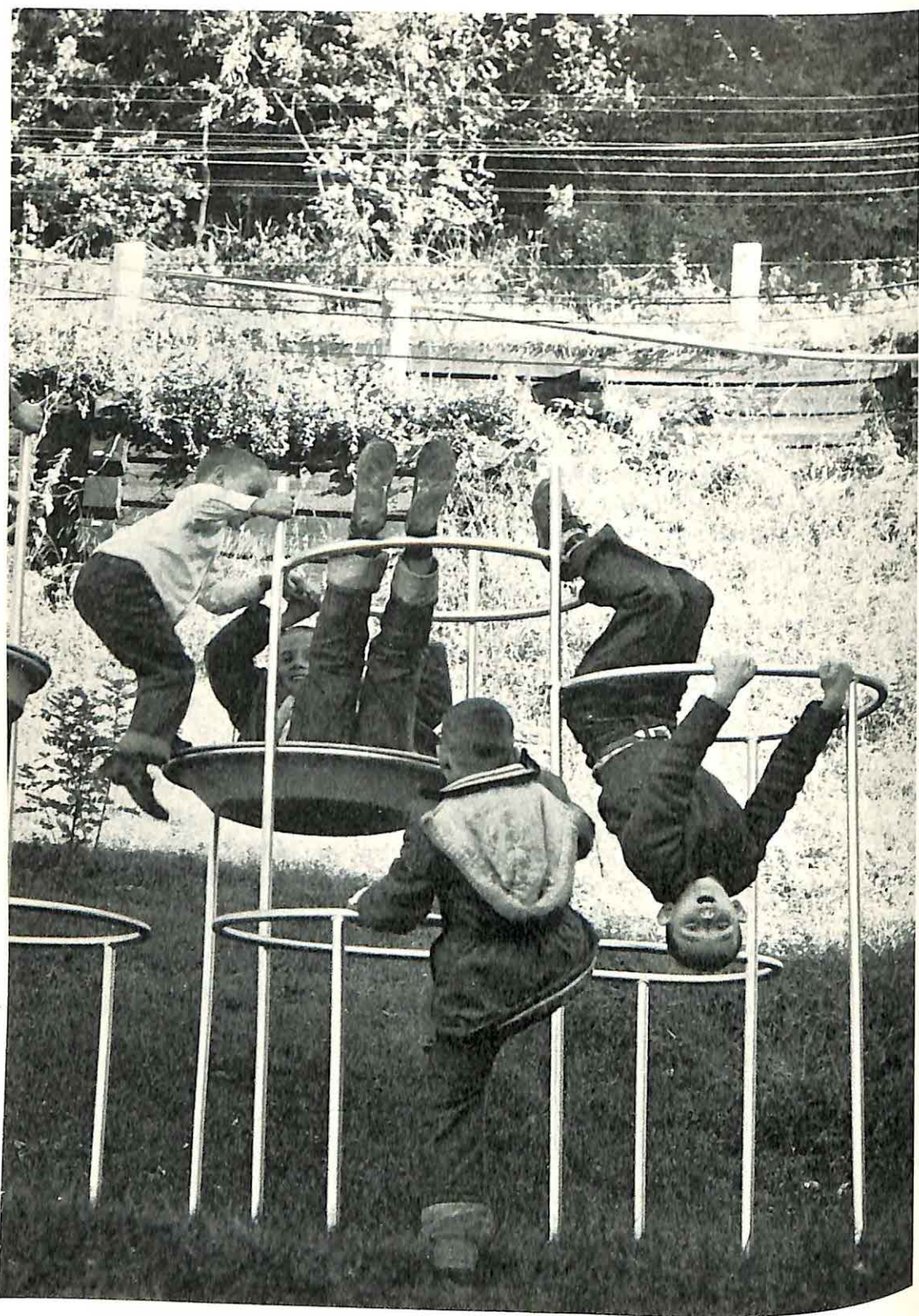
Problems and Projects

1. In the summer of 1965, the Office of Economic Opportunity initiated a summer-school project for culturally disadvantaged preschool children, designed to compensate in part for learning deficits due to their impoverished environment. One of the goals of the project was to identify health defects and initiate remedial measures. Describe the teacher's role in carrying out this goal.

2. In an affluent America, the problem of obesity is on the rise. Some doctors think that obesity has its origins in poor food habits established in childhood. Americans consume large quantities of bakery products and sugared cereals; prepared foods facilitate the serving of rich and inexpensive desserts. List the learnings you would teach about the science of nutrition that would form the basis of proper food habits. Consult college texts on nutrition for your list.

3. Teachers today are advised to emphasize the science concepts in good health practices, rather than social mores. In teaching nutrition, for example, such ideas as the basic nutrients in the four food groups and deficiency diseases are emphasized rather than chewing food with one's mouth closed and finishing everything on one's plate. Similarly, in place of teaching neatness of dress, the health curriculum teaches how clothing conserves body heat.

   Critically evaluate health courses of study in your library. Concentrate on one grade. List examples of learnings to be taught that are drawn from the health sciences. Do you find any that are based solely upon social custom? Should these be taught pupils as health concepts? Explain.

4. Design a piece of playground equipment for use in the primary grades of the elementary school. Try to have the equipment meet the following criteria:

   a. It must be sturdy and safe.
   b. As many as eight children must be able to use the equipment without undue delays and without dangerous overcrowding.
   c. The equipment should encourage creative play.
   d. The equipment should encourage physical activity that will develop coordination as well as strength.

5. The Montrose school district is building a new elementary school to house 350 pupils. A committee of teachers has been appointed to discuss with the architect the layout of the playground. The space set aside for the playground is 300 feet wide and 500 feet long. List the criteria that should govern the use of this space.

6. Contrary to popular belief, not all American boys like baseball and

other team sports. Some prefer individual activities, or those in which only one or two other individuals participate. Suggest some playground activities for such pupils at the fifth- or sixth-grade level. Include only those that utilize inexpensive equipment.

7. Mr. Gellerman is disturbed, when he takes up his duties as principal of Weber School, to find that at recess time all 400 pupils in the school go out at the same time to share a small, hard-surfaced playground with no equipment. There they mill about for fifteen minutes while two teachers watch to see that there is no disorder and to guard against accidents.

What changes might Mr. Gellerman propose to the teachers at Weber to improve the recess period? What might be done to compensate for the lack of equipment until a budget item is obtained for this purpose?

Enriching and Beautifying Life: The Fine Arts

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In a society that is becoming increasingly standardized and mechanized, the individual needs a sense of personal self-realization more than ever before. This he can achieve to a considerable extent through the humanities—literature, language, and the arts.
—Dorothy M. Fraser, *Deciding What to Teach* (Washington, D.C.: National Education Association, 1963), p. 110.

The inner drive toward the beautiful in life is innate in all of us; it is one of the characteristics that differentiate man from the lower animals. Although creative efforts are more easily observed in young children than in adults, many aspects of adult life involve the use of creative ability. The architect who plans a house in terms of the needs of a particular family, the businessman who works out unique methods of reducing overhead or increasing sales, and the housewife who selects and arranges furniture in harmony with her own tastes, are using creative ability, although perhaps without knowing it. The fine arts afford an infinite number of opportunities for releasing creative abilities, for self-expression, and for the enjoyment of the beautiful in life.

THE FINE ARTS IN THE ELEMENTARY CURRICULUM

The fine arts seem to be firmly established as an integral part of the elementary school curriculum. Music and art are no longer looked upon as peripheral subjects designed for a few pupils with exceptional talents or for

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those who expect to become professional musicians or artists. It is now generally recognized that music and art should play important roles in the lives of all members of our society and should, therefore, be included in general education.

State, county, and city school systems develop curriculum guides for music and art on the same basis that guides are developed for arithmetic, science, and other elementary school subjects. Many books, pamphlets, and professional journals provide teachers with up-to-date developments in the teaching of these subjects. Although the supply of well-qualified teachers of music and art is limited, many elementary schools have special teachers for the intermediate and upper grades, and certification requirements usually include some work in music and art for all prospective elementary teachers.

Today, few people seriously challenge the fact that the fine arts belong in the elementary school program. However, music educators, art educators, and others responsible for planning the elementary school curriculum recognize that careful planning and persistent efforts will be required in the years just ahead if these subjects are to make their maximum contributions to the kind of education demanded by the times. The urgency of the demand for scientific and technical education, the pressures for a more formal and demanding program of elementary education, the fear that our effort to provide educational opportunities for all American children may be resulting in the cultivation of mediocrity, the charge that modern programs of education foster anti-intellectualism, and the increasing tendency to ridicule the effort to produce well-rounded individuals are some of the factors that could bring about radical changes in the program of the elementary school.

Fortunately, a great deal of effort is being exerted to dispel the popular misconception that music and art are nonessential subjects and to show that they have significant contributions to make in passing on the social heritage of the past and in providing the means for adjusting to conditions of living in the future. It is recognized, for example, that we should use every means at our disposal to combat the Soviet threat of world domination and to build international understanding. In line with this objective, the United States Department of State is sponsoring art exhibits, theater performances, and concerts and tours for musicians abroad.

The case for the fine arts in the elementary school curriculum is presented in terms of their contribution to general education, which consists of what is judged to be essential for all children to learn. Three areas of general education to which the fine arts make unique contributions are esthetic growth, productive use of leisure time, and emotional development.[1]

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[1] See C. A. Burmeister, "The Role of Music in General Education," in National Society for the Study of Education, *Basic Concepts in Music Education* (Chicago: University of Chicago Press, 1958), pp. 215–235.

Esthetic Growth

Art and music play an important part in the lives of everyone, not only professional artists and musicians. We are all constantly making choices that could be made more intelligently if we had some training in taste. Examples of these are the choice of homes, furnishings, clothing, public buildings, civic improvements, and entertainment. The culture of a community is not judged alone by its industries and other evidences of wealth, but by its libraries, theaters, symphony ochestras, art museums, and schools. The development of cultural values is an important responsibility of the school and it should begin in early childhood.

The Productive Use of Leisure

For the first time in history science and technology have made it possible for the world's work to be done primarily by machines, leaving human beings with an increasing amount of leisure time on their hands to use as they see fit. Music and art have unique contributions to make to the constructive use of leisure time.

Emotional Development

The modern world requires the fullest possible development of the minds of youth, and there is an increasing amount of evidence that the emotions play an important role in the learning process. The common core of school experiences should provide for contact with those subjects and activities that appeal to the emotions. One writer has stated, "In the plainest language possible, we like music because it makes us feel good." [2] If music and art cause children to feel good about their school experiences, if the fun associated with music and art is not thwarted, these subjects will make a significant contribution to the general education of children.

Experiences relating to the fine arts are provided for elementary school children through experience units that cut across subject-matter lines, through making them a part of many curriculum areas such as the social studies and the language arts, and through separate periods set aside specifically for concentrating on information and skills in the fine arts.

MUSIC FOR CHILDREN

No one who observes a normal child can fail to notice that music has an appeal for him. The infant responds readily and happily to his mother's songs and lullabies; later, the child expresses his own feelings in chants and melodies. If he is given proper guidance, from adults who understand not

[2] Burmeister, p. 221.

only music but children as well, music will continue to be a means of helping him to express himself and to come to terms with the world about him.

Unfortunately, many children soon begin to rebel against school singing, note reading, and piano lessons. These children grow up without the rich musical heritage for which nature has equipped them. This is due not to the lack of a special talent or to any fault of music itself but to the presentation of music in the form of a patterned activity, far removed from the realities of their own living and natural interests.

The importance of skills and knowledge for furthering musical growth must, of course, be recognized. In our efforts to develop the techniques of music, however, we must not overlook attitudes and opportunity for musical expression. The varying degrees of musical ability found in any group of children make it necessary to include in the program a variety of music activities so that every child can find some activity he can enjoy and in which he can achieve some measure of success.

The Changing Concept of Teaching Music

The contrast between the old and the new practices in teaching music is as sharp as that between the old and new practices in teaching other elementary school subjects. The older practices in teaching music expressed the prevailing theory of learning, which emphasized drill on isolated parts. In the teaching of arithmetic, this meant drill on number combinations; in reading instruction, it meant rote memorization of the letters of the alphabet; and in music teaching, it meant drill on notation apart from singing or playing an instrument.

The newer practices, on the other hand, reflect the influence of the organismic theory of learning. Evidence of this is found in the more recent courses of study and in books on the teaching of music. The approach is concerned with promoting the enjoyment and understanding of music through extensive, varied, and meaningful experiences. Facts and skills are considered to be as important as they ever were, but it has been found that they are best acquired through actual use in meaningful situations. Instead of being presented as isolated parts, they are brought into use when the need for them is clearly recognized.

Sound Principles of Learning and the Music Program

The principles of learning discussed in Chapter 2 apply to the music program as well as to other areas of the elementary school curriculum. The music program should conform to the principles about to be discussed.

THE PRINCIPLE OF CONTINUITY   Growth is a sequentially organized chain of events. The teacher must consider what has gone before and what is to follow in the growth of the child. Growth depends upon maturation of the

organism as well as stimuli from the environment. In a program of musical experiences, the importance of readiness for learning must be emphasized at all levels. There can be no material that is appropriate for all children at any certain grade level; the material should be presented when there is musical readiness for it.

THE PRINCIPLE OF INTERACTION   The reaction of the child to his environment causes certain patterns of growth and behavior to be established, and these become a part of his developing personality. Human relations are improved in shared activities through such music experiences as playing in bands and listening to other children sing and play, as well as to phonographs, radio, television, and so on.

THE PRINCIPLE OF BALANCE BETWEEN SECURITY AND ADVENTURE   Growth is the result of a shifting balance between security and adventure. Guidance should provide experiences that challenge the learner to more responsible behavior.

THE PRINCIPLE OF INDIVIDUAL DIFFERENCES   Variations in biological characteristics, acted upon by variations in environment, produce unique personalities. Individual differences are found among children of all age levels in ability to learn, physical growth, emotional and social maturity, and personality.

If the music program is well balanced, children can learn that music has something to offer everyone. The alert music teacher will surround each child with conditions for the full development of his potentialities.

THE PRINCIPLE OF LEARNING BY DOING   Learnings become part of the nervous system, in the form of memories, habits, attitudes, understandings, and skills. How well children learn anything depends upon how actively they live it and how closely related the new experience is to experiences already lived and learned. Children enjoy singing nursery rhymes and other songs related to their everyday living.

THE PRINCIPLE OF LEARNING BY WHOLES   Learning situations are most effective when attitudes, knowledges, and skills are related in terms of some need or purpose that challenges attention and action. Children tend to react to situations as a whole, and parts have meaning only as they are related to the whole. For example, the parts that make up the melody "Annie Laurie" have no meaning until they are put together to form the whole melody. After the children learn to appreciate the melody as a whole, work on the separate parts will have meaning.

THE PRINCIPLE OF LEARNING BY EXAMPLE   The attitudes and skills that we wish to develop in children should exist in the teachers of children. To develop in children an appreciation of tone quality, the teacher's own voice should be light and should approximate the quality of the children's voices. The teacher's personality, enthusiasm, and spontaneity have much to do with the child's reaction to all phases of music.

Music to Every Child

The democratic philosophy of education stressed throughout this book does not permit the policy of selection and elimination in elementary school music. Principals, teachers, parents, and even the specialists in music are realizing that it is not the function of the elementary school to train children to be musicians; special music schools exist for that purpose. It is the function of music in the elementary school to develop those potentialities for growth in the enjoyment of and participation in music that are inherent in every child; to stimulate in every child a feeling for beauty; to provide a means of self-expression; to enable him to use music to enrich all aspects of his life; to provide an outlet for imaginative thinking and feeling; and to equip him better to face the everchanging world about him.

Experiences that Foster Musical Growth

Every child, regardless of his performance ability, should have the opportunity to participate in the music program. The child should be imbued with confidence so that he is willing not only to take part in the activities of the group but also to volunteer to interpret a musical thought by himself. To make this possible, a sufficient variety of experiences must be provided to meet the interests of all members of the group. Although no sharply defined lines can be drawn between them, the experiences that are used to promote musical growth usually include singing, listening, rhythmic experiences, play experiences, and creative experiences.

The most widely used approach to music for children is made through singing. This part of the program calls for attention to the selection of songs suitable for rote singing, to music-reading readiness, to music reading for those groups who can reasonably attain it, and to opportunities for individual and group performance.

The teacher's selection of material for singing is particularly important. Too often children have been taught slight, inconsequential songs that can make no pretense of being good music—simply because the songs happened to fit into a particular unit of work. Songs about the postman, the fireman, the farm, Eskimos, airplanes, and railroad trains, written especially for children, fit into this category. Children need, instead, music that they will not outgrow, music that is part of our cultural heritage, music they can share with their families. Folk music helps fill these needs. This music is part of our culture, and, like our folk literature, ought to be taught to children. Landeck helps us to see how and why folk songs can be used:

> These songs, dances and games came into being as a result of the experiences and needs of the human race. They were not founded on caprice or an eccentric vagary. For that reason they have a profound meaning for all who know them. The child who sings, "I got shoes, you got shoes, All God's

chillun got shoes," unconsciously accepts the fact that, as an integrated member of the Universe, he too may walk all over "God's Heaven." The youngster warbling the popular "Driving Steel," for the moment becomes a member of the adult world where work is hard and responsibility great. These songs are never outgrown; they act as a connecting link between generations.

Folk songs reflect every emotion from joyousness to despair. They may bounce up and down on the nonsense level or walk a stately pace with an historical event. All types of songs have a place in the teaching repertory from the rowdy refrains of cowboy songs with their vigorous, hearty language to the gentle, nostalgic ballads. The choice of songs for different age groups depends mainly on the child's comprehension of the subject matter and his response to the songs as a whole. In a repertory which includes a wide variety of songs, each will find its place without crowding out the others. It is the variety that will win the child's confidence and sustain his enthusiasm for music.

Words that seem difficult to adults are mastered without effort by youngsters. The repetition of chorus lines in sea chanties and spirituals makes them easy to sing, even at a first hearing. Before long children are vying for the solo lines of the verses without ever having been "taught" the words. It is not unusual for six- and seven-year-olds to go straight through the cumulative verses of such songs as the "Twelve Days of Christmas" without faltering. The rhythmic flow of words and music carries them along without conscious effort on their parts.

In the same way songs with nonsense syllables fascinate children and they twist their tongues around the delicious syllables expertly. To realize the pleasure such singing can give, you have only to see the faces of boys and girls as they intrepidly sing the "Swapping Song," with its "Wing-wang waddle, to my Jack-straw straddles, to my John Fare faddle, to my long way home."

The cultural backgrounds, habits, and emotions of all the peoples in the world are mirrored in their folk songs. What better way is there to introduce to the coming leaders of the world their international and interracial friends! This kind of learning assimilated emotionally is, in lieu of actual experience, the most meaningful we can give them and therefore the most likely to remain with them.

The history and geography of our own country, too, come alive to the child who knows his great heritage of American songs, such as

"I've got a mule; her name is Sal;
Fifteen miles on the Erie Canal"

or the sea chanty "We're Bound for Rio Grande" and the lumbering song "Cutting Down the Pines." Through songs of this type the child learns of another era and of the work of men who helped to build our country and make it great. Cowboy songs, Negro spirituals, work songs, songs of soldiers and sailors, songs of the docks and the railroads and the rivers—all of these tell tales of America in the making.

The mood of these vivid songs projects itself into the singer and a resourceful teacher may use this effect to advantage. The interests of the class may be unified with a humorous story such as we find in the ballads "The Old Lord by the Northern Sea" and "The Farmer's Curst Wife," low spirits can be raised by the rollicking "doo-da's" of "Sacramento," or an obstreperous tumult can be calmed by the soothing words and melody of the cowboy who quiets his dogies in "Night Herding Song."

These songs originated in the hearts of the people rather than in the minds of scholars and artists. They have survived because they were loved and shared. For this reason, they do not require the trained tremolo of operatic stature but simply the affection of enjoyment. They are easily available and should be part of the equipment of every classroom teacher. An armamentarium consisting chiefly of folk songs will provide ample material for singing, games, rhythms, and dramatic play and will act as a springboard for creative work.[3]

Some useful sources of songs suitable for children are the following:

1. *Ballads, Carols, and Tragic Legends from the Southern Appalachian Mountains*, compiled by John J. Niles (New York: G. Schirmer, Inc., 1937);

2. *Book of American Negro Spirituals*, edited by James Weldon and Rosamund Johnson (New York: The Viking Press, Inc., 1925);

3. *Git On Board*, by Beatrice Landeck (New York: E. B. Marks Music Corp., 1944);

4. *Nursery Songs from the Appalachian Mountains*, compiled by Cecil J. Sharp (London: Novello and Co., 1933);

5. *Songs of American Sailormen*, edited by Joanna C. Colcord (New York: W. W. Norton & Company, Inc., 1938);

6. *Songs to Grow On*, by Beatrice Landeck (New York: E. B. Marks Music Corp., 1948);

7. *Songs My True Love Sings*, compiled by Beatrice Landeck (New York: E. B. Marks Music Corp., 1947).

Evidence that interest in folk songs continues far beyond childhood is found in the hootenanny, where hundreds of young people gather to sing and to listen to the singing of folk songs. It is also found in the popularity of folk songs among high school and college voluntary musical groups.

Not all songs the teacher selects will be folk songs. Selections from classical music, such as *Hansel and Gretel*, should also be part of the music program. Our musical heritage is so rich and varied that slight and trivial fare can easily be crowded out.

How does the teacher teach the songs? He teaches in the way that is easiest and most comfortable for him. Some teachers like to have children

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[3] Beatrice Landeck, "Music with the Two to Nines," in *Children and Music* (Washington, D.C.: Association for Childhood Education, 1948), pp. 13–15.

gather around the piano and sing, with the piano accompanying, as they do in their informal singing at home. Some teachers who can carry a tune well will teach songs by rote—that is, they will sing one line at a time and have the children repeat until the whole song is sung. If a teacher has a voice like a crow and a good collection of records, he may play the record and have the children learn by listening. Artificial prohibitions against the use of the piano while children sing or against the teacher's singing with children have given way to encouragement of more lifelike and enjoyable ways of teaching songs. Gone, too, are the devices for having children "sing high." Whereas formerly it was believed that all children have high-pitched voices and should sing in a high pitch, research now indicates a range in children's voices that should be recognized. Research also shows that in the past elementary school teachers have pitched children's songs too high for their natural range.

Rhythm Instruments

Although singing is an important musical activity, it is not the only activity in which children can engage profitably. Children can also express themselves through the use of rhythm instruments. Such instruments should go beyond the stereotyped sand blocks and rhythm sticks usually associated with so-called rhythm bands. Christianson suggests the following:

> Home-made drums of various types and sizes may be made from good-sized kegs, large wooden buckets, chopping bowls, and old-fashioned brass jardinieres. It pays musically to get good material for a drum head. Skins for this purpose may be purchased from local firms handling band instruments or from mail-order catalogues.
>
> Indian and Chinese drums may be secured ready made.
>
> Interesting rattles are on sale in some of the Mexican shops and trading posts. Gourds and various seeds and pods may be used in making still others.
>
> Bells of various types and sizes are in demand by the children for sound effects in dramatic play as well as for music and adornment when dancing. Music stores and gift shops have some of the mellow musical bells with wooden clappers, which come from Bali, as well as the tinkling necklaces worn by Javanese dancers.
>
> For tonal and melodic experimentation, if there is a piano in the room, children's interest in using it musically will be enhanced by the availability of illustrated song books and some home-made "sheet music." For this purpose one may use manila folders and on each mount an appropriate picture or two to accompany a favorite song. Some of the children's original songs may also be illustrated and kept in this form.
>
> A three- or four-toned gong is a source of pleasure. Better yet, if available, is a set of tonal blocks or chimes or a set of bells comprising an octave. They may be used by children for individual experimentation and by the teacher to accompany many of the children's songs.
>
> For experimentation with strings there is a nursery harp designed espe-

cially for children. [Designed by Beatrice Spaulding, manufactured by Parker C. Reed, Belmont, Massachusetts.] The teacher will find it fun to experiment herself with a psaltery or an auto-harp, to accompany children's singing in a group out of doors.[4]

Sometimes these instruments may be used by the children to accompany group singing. Teachers will also find that they add to the value of a music corner where children may listen to good music before school and during free choice periods. As children listen to recordings, they may keep time on the drum or with bells and rattles. Used in this way, rhythm instruments can be an integral part of the music program.

Rhythms

For years elementary teachers, particularly at the primary level, have found it valuable to provide opportunities for children to express music through bodily activity. Sometimes this has been done through singing games, such as "Row, Row, Row Your Boat," in which the children sit on the floor in pairs and, facing each other and clasping hands, rock back and forth in time to the music. Sometimes the teacher has played "elephant" music and the children have pretended to be elephants with swaying trunks. This last approach, which contributes little to the creativity of children, is giving way to an approach that closely resembles the modern dance. Children are helped to express ideas through the movement of their bodies. As Sheehy has pointed out,

> One of the greatest contributions made by modern dance has been its recognition of the independence of movement as an art medium. Music is used to support it; it is part of the scenery; it is the handmaiden of the dance. Many times it is composed especially for the dance, since music that will clearly interpret the movement cannot always be found.
>
> Those of us who work with little children have much to learn from a study of contemporary dance if we would be understanding guides of their use of movement. We have given them opportunity for unhampered physical activity on the playground and during their free periods: but as soon as a small group come together for dancing, we have been too eager not only to tie up their ideas immediately to music bus also to use music as a stimulus. We forget that children's ideas and their urge to sheer physical activity are a much more powerful and vital stimulus than any music we can offer, and a far more rewarding one if we wish to capture their enthusiasm. We must therefore give them every opportunity to use their "material"—the material of movement—and train ourselves in recognizing their natural functional movements as our most important asset in teaching.[5]

[4] Helen Christianson, "Producers or Consumers: Which Shall We Foster?" in *Children and Music* (Washington, D.C.: Association for Childhood Education, 1948), pp. 7–8.
[5] Emma Dickson Sheehy, *There's Music in Children* (New York: Holt, Rinehart and Winston, Inc., 1946), pp. 73–74.

How does a teacher initiate a modern dance approach in her rhythms work with children? Sheehy suggests "stunts" as an appropriate beginning. A textbook for teachers of young children has these suggestions:

> The young child is very much the individualist in his movement. The teacher of four-year-olds who gathers a few of them around her, helps them to take off their shoes, and indicates the wide area of free space in which they may dance, sometimes says, "Now, let's see how you will move from here way over to the windows." Some may hop, some swirl, some run, others half-skip, but each is likely to be quite different from the others. Or, they are stretched out on the floor, each a good arm's length from the other, when the teacher suggests that they move in their places. One rocks up and down on his haunches, another moves in a circle, with his feet and arms stretched straight out, still another rolls himself into a ball and seems to bounce in his place. Some children are free, easy, and responsive; others may be tight and inhibited. The teacher watches for movements that suggest release from tension, helps children to make more of them through her comments and occasionally through physical assistance. "Stretch as far as you can!" "Leap high." "That was interesting; can you do that with a straight back too?" Sometimes there is music, sometimes only the drum, sometimes just movement.
>
> Children who at four and at five have been encouraged to move freely, to let their bodies express their feelings, gradually develop interest in each other's forms, in experimentation with the pattern someone else is setting. The teacher may say, "Look at Don's way of doing it. Who else would like to try that?" She does not say, "This is the way to do it." Rather she accepts the integrity of each child's expression. Children who have had such understanding, such artistic teaching, do not become mere imitators at age seven and eight but retain the sense of creativity which is fundamental in the earlier years.[6]

Interest in the modern dance does not end with the primary grades. Recently a midwestern university sponsored a modern dance class for children on Saturday mornings—and was swamped with applications from elementary children at all grade levels. The space requirements for older children are greater; the use of an assembly hall or gymnasium, if these facilities are available, is advisable.

ART EDUCATION

The last decade has seen an intensified interest in the art program in elementary schools. College courses in public school art have increased rapidly; opportunities for in-service growth of teachers have been provided in

[6] Roma Gans, Celia B. Stendler, and Millie Almy, *Teaching Young Children in Nursery School, Kindergarten, and Primary Grades* (New York: Harcourt, Brace & World, Inc., 1952), p. 308.

the form of workshops and consultant services; and art in the elementary school, once regarded as a "frill," is now regarded as an integral part of every good elementary school program.

Pronounced changes have been taking place in the concept of what constitutes a good program of art education. The number of teachers who regard art as consisting primarily of drawing, of copying the work of others, and of conforming to rigid grade standards is rapidly decreasing. The modern approach to art education, based on the newer psychology of learning and the democratic philosophy of education, provides a more flexible program that allows each child to grow as an individual, provides opportunities for each child to satisfy his creative impulses, develops sensitivity to the beauty in art products that he makes and observes, and enriches his living through the cultivation of skills and understandings. The modern art program is concerned with making art functional and meaningful to children, with enlisting the aid of persons in the local community who have special competencies in art, with making art an integral part of the total school program, and with extending art beyond the school into the life of the home, the community, and the state.

Why Teach Art in the Elementary School?

Art education can make valuable contributions to the principal objectives of the elementary school—to provide opportunities for every child to develop his innate abilities to the full extent and to contribute to the improvement of living in our society.

Art education provides a means for the child to express his ideas, feelings, and emotions; helps him to appreciate beauty in the world about him; and helps him to develop confidence in his own abilities.

Art education contributes to the realization of the social objectives of the elementary school by developing in children an awareness of the beauty or lack of it in home and community and by developing in them the skills needed for home and community improvement. Art education serves the community, state, and nation by developing the ability to use leisure time constructively and by providing opportunities for parents and children to work together cooperatively on projects relating to home and community beautification.

There are also therapeutic values in art. Cross children, tired children, tense children seem to relax as they work with art materials and to lose some of their aggressiveness, their fatigue, and their anxiety. Certain free media such as clay and fingerpainting are particularly beneficial. There is no scientific explanation as to why painting with fingers or modeling in clay is a release from tension, any more than we can explain the release afforded by an activity such as making mud pies. Yet it is a common observation on the

part of teachers that the child who appears to be "tied up in knots" finds these free media relaxing, absorbing, and tension releasing.

Some art work is therapeutic for a different reason. At times children may express their secret hopes, fears, or hostilities symbolically; the aggressive child may work off some of his aggressions in the gory battles that he paints, and the fearful child relieve his anxieties by drawing some of the things that trouble him. However, the teacher must be careful not to read too much into such pictures. Every child who draws a witch is not necessarily afraid of such creatures and every child who draws a plane spitting fire is not full of aggression. If art can help children express their feelings and so get rid of unpleasant ones, all well and good; elaborate interpretations of what they are doing are not necessary.

Who Should Teach Art in the Elementary School?

Whether the teaching of art in elementary schools should be reserved exclusively for teachers who have majored in art or art education during their preservice preparation is largely an academic question. The fact is that teachers with this type of preparation are not available in sufficient number to provide art education for all elementary school children. The writer is convinced that art education should receive more emphasis in the preparation of all elementary school teachers and that the services of an art specialist should be available to all teachers in the elementary school. Elementary teachers without special preparation in art should take advantage of workshops in art education sponsored by colleges and universities and other in-service education programs through which they can become better skilled in teaching art and in handling art media.

Creative Work

The child is a potential creator; his creativeness is born of real enthusiasm and joy of expression; he expends his energy on drawing and painting as he does in play. Creative education develops the child's own personal thoughts and feelings. It is the part of education that places value on the child's individual reactions.

Creative art encourages children to think their own thoughts and to make their own interpretations; it gives children confidence in their own abilities; it encourages experimentation and promotes mental health.

Creative work repudiates a number of fallacies: that art should be confined to specific art periods; that uniformity in work should be expected of each child; that the object of the art program is to make a professional artist of each child; and that coloring-in hectographed pictures has value for the child.

Creativeness, once encouraged in the art program, will reflect itself in the

child, and the process of creating will quicken his interests and enrich his outlook.

The Classroom

Since art work is tied in with all other interests and is geared to suit the nature and scheduling of all the activities in which the pupils are engaged, each room is in itself an art room. The ideal room has good natural light, a sink with running water, ample storage space for supplies, electric outlets, good display space for the pupils' work, light-colored walls, and other facilities that encourage the production and display of creative work. Many schools lack these facilities, but much can be done to make any room a pleasing place for the children.

The classroom should show the work of children. However fine an exhibit may be, it loses significance to visitors and the children unless it represents the results of the children's own efforts. The classroom should have a "beauty spot," in which materials are exhibited and changed frequently. The exhibit can be a particularly nice arrangement of flowers, an object brought from home, a magazine cover, or a well-illustrated new library book.

Familiarity with good pictures broadens the child's appreciation, and the appeal of the room may be increased by a well-arranged display of good prints. If several good prints of the same size are available, a standard frame can be made and the prints changed often, the children being allowed to choose the picture they like. Catalogues of colored reproductions may be obtained from many distributors.

Experiences with Many Media

Art education in the modern elementary school includes not merely drawing but also work with crayons, fingerpainting, making hand puppets, paper sculpture, work with colored chalk, and clay modeling. Courses of study and teachers' manuals contain detailed instructions for work in these and other areas.[7]

Many schools have been experimenting successfully with some interesting new media, and new ways of using the old. Mobiles of various kinds—constructions of delicately balanced movable parts that move rhythmically with air currents—are gracing elementary classrooms. Children are using materials on their paintings to convey the mood of the picture, such as soft feathers, scratchy sandpaper, beautiful pebbles or seashells, bits of moss, fabrics of different textures, which help to create "feeling" as well as "seeing" pictures. Wire in place of clay and paper is being used for modeling, and interesting modern designs are being created with this medium. Space designs challenge some pupils, as they work to fill the space on a block of wood or within a

[7] See *Art Education in Oregon Elementary Schools* (Salem, Ore.: State Department of Education, 1958).

cardboard or metal container in an esthetic manner. These activities open up possibilities for fresh artistic production; if children's creativity seems blocked as they work with more traditional materials, these newer media will often stimulate fresh creative efforts.

Teaching Appreciation

The experiences of discovering, of enjoying, and of valuing should have a large part in the art program. These attitudes can be developed to a great degree through guidance in looking at good art, talking about selected examples of good design, and seeing art applied in the environment.

SEEING   Awareness is a basic element in appreciation. A child should be exposed to and his attention directed toward many lovely things. The teacher and children can point out and discuss:

1. The changing colors in the sky;
2. The designs in wallpaper;
3. The color and design of dress material;
4. The applied design on cowboy boots;
5. The arrangement of packages on a shelf;
6. The design on chinaware;
7. The shape of a coffee cup;
8. The texture of cloth;
9. The shadows in the school hall.

TALKING

1. Discuss vases or containers for flowers and suggest possible flower choices, colors, arrangements, and so on.
2. Bring things that are well designed, such as toy cars, cups, plastic combs, pencil boxes, rings. Show poor examples for contrast.
3. Discuss material suitable for house construction. Visit a house under construction.

APPRECIATING THE WORK OF OTHERS

1. Choose for display the work of many artists who are recognized as outstanding. Let the children say what they like about the pictures.
2. Discuss illustrations found in books.
3. Have one child show his drawings.
4. Have children bring magazine pictures they particularly like.
5. Find examples of good color harmony.
6. Exhibit the folk arts and crafts of the community.
7. Display the work of artists of different races.
8. Exchange children's work among different schools.

If an alertness for and an appreciation of beauty in his environment are instilled in the young child, he will have gained an important source of genuine enjoyment for the rest of his life.

Art and Community Life

The art program, like the other parts of the elementary school curriculum, is being related more closely to community life. Parents and other interested citizens are invited to visit art classes, to come to the school to see exhibits of the art work of pupils, and to bring samples of their own arts and crafts for exhibition. Children are encouraged to observe closely at home and in the community to get ideas for expression through different art media. The following activities and many others can be used to enrich the art program and to relate it more closely to community living.

1. Make posters advertising the local flower show, rodeo, dog show, baseball game, and so on.
2. Have an "art fair" or "craft day" or "I Made It" day, for which each child brings some object made by himself or someone he knows. Arrange these objects in an attractive display. Perhaps the display will contain wood carvings, knitted sweaters, pottery ash trays, paintings, dresses, paper flowers, hand-hooked rugs, embroidered pillow cases, a footstool, a model car, a kite, a reed whistle, and so on.
3. Offer your class bulletin board or wall space for a one-day showing of a local amateur artist's work.
4. Offer the children's work for an exhibit in a local store.
5. Make puppets and invite the parents to a puppet show.
6. Have a display of articles made in the community.
7. Ask local merchants for materials to display to point out new design in products. You might get the latest model toaster, iron, pie dish, coffee pot, toothbrush, perfume bottle, cigarette lighter, mop, and so on. If you cannot assemble the materials, take the children to a hardware store and have them look for all the things with the "new look."
8. Take the class to visit an "art center."
9. Discuss house plans. Have the children bring pictures of their own homes and make a border for the chalkboard, using the pictures of actual houses.
10. Have a display of Indian art.
11. Cooperate with the Cub Scouts, Brownies, and Camp Fire Girls to display art work.
12. Make simple maps of the community showing routes children take in coming to school, going to movies, and going to the park.
13. Take sketching trips to draw local beauty spots.

14. Utilize the services of the Junior Red Cross in getting ideas for practical art projects for the children.

Industrial Arts in the Elementary Curriculum

People use raw materials and tools as they seek to meet their needs for food, clothing, shelter, transportation, communication, and the expression of esthetic impulses. Industrial arts in elementary schools deals with the processes used to make changes in the forms of materials to increase their value in meeting human needs. This study helps boys and girls understand the foundations on which our own culture and the cultures of other countries have been built.

In former times, children learned from firsthand experiences how food was grown, harvested, and cooked; how houses were built from lumber cut from the forest; how clothing was made from wool and cotton; and how other basic needs were met by making changes in the raw materials of nature. Children today have few opportunities to learn at home how raw materials are changed to provide for human needs. The school has, therefore, assumed a share of the responsibility for helping children gain a better understanding of and appreciation for the materials in their environment, for people who do various types of work, and for the problems involved in changing materials into more usable forms.

Industrial arts overlap and supplement many curriculum areas in the elementary school, particularly the fine arts and the social studies. They are seldom taught as separate subjects. They make valuable contributions to the general objectives of elementary education by giving pupils opportunities to (1) explore the organization, materials, processes, products, and occupations involved in industry; (2) develop recreational and avocational interests; (3) develop an appreciation of good craftsmanship; (4) increase the ability to buy, use, and care for the products of industry; (5) develop creative abilities; and (6) practice desirable social relationships.

Industrial-arts activities generally recognized as desirable for elementary school children include (1) weaving with twine, cloth, wool, and reed; (2) constructing projects using wood, leather, plastics, cement, and clay; (3) studying industrial processes by use of visual aids and field trips; (4) using common hand tools and simple power tools; (5) sewing, preparing food, and studying the care of textiles; (6) doing home-mechanics jobs; (7) caring for animals; and (8) caring for plants and shrubs at home and at school.

Modern methods of teaching industrial arts exhibit the same characteristics as good teaching in other phases of the curriculum. They include (1) providing opportunities for learning by doing; (2) meeting the natural urge to investigate, manipulate, and build; (3) adapting experiences to the interests, abilities, and backgrounds of pupils; and (4) utilizing opportunities for integrating industrial arts with other areas in the curriculum.

CONTEMPORARY MUSIC AND ART

Styles in writing music, like styles in everything, have changed during different periods in history. An understanding of contemporary music, therefore, depends to some extent on an understanding of the music of other periods in history. Modern composers write many types of music, including some types that have many characteristics in common with the music of other eras. Generalizations about contemporary music are, therefore, difficult to substantiate.

It is appropriate, however, to mention two conflicting views relating to the basic nature of music. One of these views holds that music is expressive; that it emerges from the aspirations of people during a particular period in history; that it calls up thoughts from past experiences; and that it tells us something. It cannot be denied that much music that serves this purpose has been written. The compositions of Wagner, Liszt, and Tschaikovsky are examples of expressive music. The *Bay Psalm Book* was used during colonial times not only for congregational singing in churches, but for educational and recreational music as well. Like the *New England Primer*, it reflected the concern for salvation that largely dominated life during colonial times. "Liberty songs" reflected the strong desire for independence during the American Revolution; folk songs depicted the daily activities of our ancestors who opened the frontier; and the excitement caused by the advent of the automobile was reflected in the music written at that time.

Grant stated in 1951 that the expressive theory had exclusive sway in music education.[8] An article written by Madison in 1958 contained the following statement:

> The demand for greater diversity in the selection of musical materials would seem to call for more than musicological research study. Nothing short of a study of our total culture and the place of music within that culture would seem to suffice.[9]

The other view holds that music can portray nothing beyond the sounds we hear; that it is not a substitute for language; that it does not express anything; and that it simply is an orderly pattern of tones, beautifully arranged. Stravinsky, in his later works, wrote music that he intended to be nonexpressive; many musical compositions during the Classical Period and earlier were unconcerned with expression; and many contemporary composers write this type of music.

[8] Parks Grant, *Music for Elementary Teachers* (New York: Appleton-Century-Crofts, 1951), p. 245.

[9] Thurber H. Madison, "The Need for New Concepts in Music Education," in National Society for the Study of Education, *Basic Concepts in Music Education* (Chicago: University of Chicago Press, 1958), p. 26.

The debate concerning these two views serves a useful purpose by reminding teachers that pupils should have an opportunity to know many kinds of music: popular music, which they hear continually; serious music, which has more variety in melody, harmony, and rhythm; the music of previous centuries; the music of other countries; and contemporary music. Stendler has stated, "Not all contemporary music will survive the test of time, but it is an expression of the period in which we live and should be known to children." [10]

Closely related to the nonexpressive view of music is the view that a work of art has its own inherent worth, which is in no way dependent upon how well it represents something. This type of art is called "nonobjective art." This view holds that the viewer's attention should be focused upon line, space, design, and color, and not upon the object of the drawing. Merritt said,

> Ours has been an era of outpouring of nonobjective art, and school art programs, in keeping with the general tenor of the times, have turned enthusiastically to art activities of a nonrepresentational nature.[11]

Merritt stated also that nonobjective art seems uniquely fitted to the idea that all children are creative.

> At the same time nonobjective art has offered opportunities for release from the frustration that often accompanies children's inability to reach their own standards of realism.[12]

The relationship between the trend toward nonexpressive music and nonobjective art and recent trends in other subjects such as mathematics and science can scarcely be overlooked. More emphasis on the mathematical phases of arithmetic and less emphasis on its social applications and emphasis on the structure of the discipline in other curriculum areas are cases in point. For better or for worse, ours seems to be an era in which specialists in the various disciplines are insisting that the values inherent in the discipline itself be recognized.

EVALUATION IN THE FINE ARTS

Effective teaching in the area of the fine arts requires information concerning the capacities, strengths, and weaknesses of individual pupils. This information can be gained only by continuous and comprehensive evaluation. Standardized tests, teacher-made tests, and systematic observation are the principal means of evaluation. The information obtained is used both for guiding and motivating the pupil's learning and for improving instruction.

[10] Celia B. Stendler, *Teaching in the Elementary School* (New York: Harcourt, Brace & World, Inc., 1958), p. 437.
[11] Helen Merritt, *Guiding Free Expression in Children's Art* (New York: Holt, Rinehart and Winston, Inc., 1964), p. 58.
[12] *Ibid.*, pp. 59–60.

Measuring Aptitudes for Music

Several tests have been published that purport to measure innate musical ability rather than the results of musical training.[13] These tests are used for selecting pupils in the upper elementary grades for intensive training in vocal or instrumental music, to provide data for counseling with parents about the advisability of having their children take private lessons in music, and for counseling pupils about preparing for a career in music. The test results should be considered as one source of evidence, along with all other information about the pupil that has a bearing on his potential for successful experience with music, such as his previous success and level of motivation.[14]

Evaluating Pupil Progress in Music

Less emphasis has been placed on objective measurement of pupil progress in music than in some other curriculum areas because of the fear that it might inhibit the pupil's creativity and interfere with his enjoyment of music. Specialists in educational measurements advise that evaluation techniques used in music and other fine arts avoid these hazards.

Pupil achievement in music consists of musical knowledge and understanding, skills of performance, skills of listening, attitudes, musical appreciation, and music habits. Standardized tests have been published for some of these areas.[15] However, these tests should be used only when it is evident that they correspond to the objectives of the course being taught. Teachers can usually rely largely on tests of their own construction that are related closely to the scope and objectives of the courses they are teaching. The teacher can also do a great deal of evaluation by observing pupils systematically for evidence of ability to pay attention, to participate with enjoyment, to sing in time, to memorize easily, to sing in correct pitch, and to use soft, smooth tones.

Measurement and Evaluation in Art Education

A few tests have been published that purport to measure art ability. These tests deal with recognition of proportion, originality of line drawing, observation of light and shade, knowledge of vocabulary, problem in parallel perspective, problems in cylindrical perspective, problems in angular perspective, and recognition of color.[16] Specialists in educational measurement point

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[13] See Harry S. Whistler and Louis P. Thorpe, *Music Aptitude Test, Series A* (Los Angeles, Calif.: California Test Bureau, 1950).

[14] See Jack Kough and Robert F. DeHaan, *Identifying Children with Special Needs* (Chicago: Science Research Associates, Inc. 1955), pp. 35–44.

[15] See a recent issue of Oscar K. Buros, *Mental Measurements Yearbook* (Highland Park, N.J.: Gryphon Press).

[16] See Alfred S. Lewerenz, *Tests in Fundamental Abilities of Visual Arts* (Los Angeles, Calif.: California Test Bureau, 1927).

out, however, that evaluation of a pupil's future promise in art should not be based on test data alone but on a combination of his experiences in various art activities, his art products, and his interest and motivation.

Published measures of achievement in art have been limited primarily to drawing scales.[17] These scales enable the teacher to compare pupil drawings with samples of standard quality and to assign ratings on the basis of such comparison. However, most art educators and specialists on evaluation believe that concentration on the final product inhibits creative expression and interferes with the child's enjoyment of art as an avenue for self-expression.

This does not imply, of course, that the teacher will not use any standards to evaluate the growth of the child in art techniques. It means, rather, that her evaluation will take into account not only the degree of excellence of the product but also the extent to which personal growth and creative self-expression are taking place. What the experience is doing for the child constitutes the principal basis for evaluation of art experiences. The teacher is constantly looking for evidence regarding such patterns as the following:

1. Do art experiences seem to provide an emotional outlet for the child?
2. Is he receiving satisfaction from his art work?
3. Is he trying to express something in his own way?
4. Is he growing in the ability to criticize his own work and to accept and use the criticisms of others?
5. Does he show an eagerness to improve his art techniques?
6. Does he engage in any type of art activity on his own initiative?

SUMMARY

1. The elementary school program, if it is to be realistic, must provide a balance between creating and conforming.
2. Experiences in the fine and industrial arts may be provided for children in connection with experience units and other curriculum areas, and in separate periods.
3. Attitudes and opportunities for self-expression in music should not be overlooked in the effort to develop the techniques of musical performance.
4. The older practices of teaching music reflect the mechanistic concept of learning; the newer practices grow out of the organismic concept.
5. During the last two decades, research has done much to discount the value of isolated drill on notation as a method of learning to read music.

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[17] L. W. Kline and G. L. Carey, *Measuring Scale for Freehand Drawing: Design and Composition* (Baltimore: Johns Hopkins University Press, 1933).

6. Recent courses of study and curriculum guides recognize that skills are important in music, but suggest that they can best be developed through use in meaningful situations.

7. Concepts of learning utilized in modern music teaching include the principles of continuous growth, interaction, balance between adventure and security, individual differences, learning by doing, learning by wholes, and learning by example.

8. It is the function of the elementary school to develop those potentialities for enjoying music and participating in musical expression which are inherent in every child rather than to train a few children to be musicians.

9. Experiences that foster growth in music include singing, listening, rhythmic experiences, playing, and creating.

10. There has been a decrease in the number of teachers who regard art as consisting primarily of drawing, of copying the work of others, and of conforming to rigid patterns and grade standards.

11. The modern approach to art education, based on the newer psychology of learning and the democratic philosophy of education, provides a flexible program, allows each child to grow as an individual, and develops the child's sensitivity to beauty in the art products he makes and in those he observes.

12. Art teaching in the elementary school is closely related to the general objectives of the whole elementary school program.

13. There is a need for more preparation in art education for elementary school teachers both at the preservice and the in-service stages.

14. In a very real sense, every teacher is an art teacher, whether he recognizes it or not.

15. The services of an art consultant should be available to the teachers in every elementary school.

16. Creative art encourages children to think their own thoughts and make their own interpretations; gives children confidence in their own abilities; encourages experimentation and promotes mental health.

17. The modern program of art education utilizes many media for expression; utilizes opportunities as they arise in connection with all curriculum areas; extends beyond the classroom into the home and community; and is evaluated in terms of what the experience is doing for the child.

18. Industrial-arts activities help boys and girls to understand the foundations on which our own culture and the cultures of other countries have been built.

19. Industrial-arts activities provide a valuable means of satisfying the natural urge to manipulate, investigate, and construct.

20. Industrial arts supplement other curriculum areas, particularly the fine arts and the social studies; they are seldom taught as separate subjects in the elementary school.

SELECTED READINGS

Grant, Parks, *Music for Elementary Teachers*. New York: Appleton-Century-Crofts, 1951. Chapter 26 presents some essential information about music, characterizes the music of various periods, and contrasts two theories on the basic nature of music.

Hartsell, O. M., *Teaching Music in the Elementary School*. Washington, D.C.: Association for Supervision and Curriculum Development, 1963. This fifty-three-page pamphlet, cosponsored by the Music Educators National Conference, presents "the child's Bill of Rights in music," the responsibilities of the school administrator, the teacher, and tne music supervisor.

Kough, Jack, and Robert F. DeHaan, *Identifying Children with Special Needs*, in *Teacher's Guidance Handbook, Elementary School Edition*. Chicago: Science Research Associates, Inc., 1955. Presents suggestions that teachers may use in identifying pupils with musical and artistic talents.

Landeck, Beatrice, *Children and Music*. New York: William Sloan Associates, 1952. Contains practical suggestions for the music program in elementary schools.

Lowenfeld, Viktor, *Creative and Mental Growth*. Third ed.; New York: The Macmillan Company, 1957. Chapter 1 deals with the contributions of art to general education; Chapter 2 presents evidence concerning the harmful effects of workbooks and coloring on children.

Merritt, Helen, *Guiding Free Expression in Children's Art*. New York: Holt, Rinehart and Winston, Inc., 1964. Chapter 7 deals with nonobjective art in the twentieth century culture and in social art programs.

National Society for the Study of Education, *Basic Concepts in Music Education*. Chicago: University of Chicago Press, 1958. Learning theory in music education, music in general education, and evaluation in music education are discussed extensively.

National Society for the Study of Education, *Art Education*. Chicago: University of Chicago Press, 1965. This yearbook brings together materials not readily available on art education.

Wilt, Miriam E., *Creativity in the Elementary School*. New York: Appleton-Century-Crofts, 1959. Emphasizes the importance of stressing creativity for communication's sake.

SELECTED FILMS

The following represent only a few of the films available in art and music. The teacher should consult the film service in the local school system, the state university, or the state department of education for lists of films in these areas.

Beethoven and His Music. A thirteen-and-one-half-minute sound film that develops the relationship between Beethoven's environment and his personal response to it in terms of his music. (Coronet Films)

Education through Art and Home Economics. A twelve-minute sound film. Shows how planning and making clothing becomes a rich educational experience for junior high school girls. Yeshiva University, N.Y.

Hand Industries of Mexico. An eleven-minute sound film showing the technique of handicraft and its place in Mexican life. (Coronet Films)

Harmony in Music. A thirteen-and-one-half-minute sound film showing how harmony supports melody and rhythm to add vitality and greater enjoyment to music. See also *Melody in Music* and *Rhythm in Music.* (Coronet Films)

Let's Draw with Crayons. An eleven-minute sound film showing how to use and care for crayons and some of the interesting effects that can be achieved. See also *Let's Paint with Water Color.* (Coronet Films)

What is Art? A six-minute sound film in color. Encourages children to discover and understand basic art elements: color, line, texture, form, light, and dark. (Encyclopaedia Britannica Films)

The Zoo: Primary Art Activities. A twenty-two-minute sound film. An elementary class visits the zoo. Back in the classroom the children discuss the animals and carry out various art projects. (Iowa State University)

Photo Comment

FOSTERING CREATIVITY

Whether elementary education should attempt to foster creativity is much disputed today. There are those who argue that creative activities are a waste of time better spent in learning the basic skills. These people would grant the need · in the modern world for creative statesmen, scientists, artists, musicians, and writers, but generally consider that these are produced in a curriculum with a strong emphasis upon traditional subject matter and learning activities. The modern school does not deny the importance of subject matter but insists that proper selection of learning activities will result in better learners and more creative thinkers. In all subjects and whenever feasible children are encouraged to develop original solutions to problems.

The art period in elementary schools would seem to offer an ideal opportunity for fostering creative expression, but unfortunately it is not always so used. In some classrooms, children are given outlines to color and patterns to trace, or they may be given specific instructions on how to draw a tree, a bird, or a child. Lessons such as these give pupils practice in following directions, but they do not encourage creative thinking nor do they result in creative products.

Some teachers plan the art period so that children may choose from among three or four media—perhaps paints, clay, or crayons. What children are to draw or paint is not dictated, but they are given freedom to express their ideas. Children who say, "But I don't know what to draw" are helped to recall a recent experience, to see that one's own experiences provide the reservoir from which one creates, and to be better observers. Some children never see a sunset, never notice the pattern of dark and light in the classroom, never observe how a vista may be framed by nearby trees, never see the interesting composition of three heads bent over a desk. These children must become more aware of their environment in order to take what they have perceived and recreate it in an original fashion.

Creative experiences need not be confined to any particular media, however. This photo shows a child using a primitive-type loom used by the American Indians to weave belts and headbands. Even young children can create their own designs in advance and translate them onto such a loom. Such creative experiences enrich our daily living and, in these days of increasing automation, are essential if man is to remain man.

Photo by Helen Nestor

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Problems and Projects

1. Americans are becoming increasingly aware of the man-made ugliness of cities and countryside, and, while the program to beautify America has been the butt of many jokes, nevertheless such a program is sorely needed. Divide up your local community (or part of it, if it is a large city), and have teams of students survey the different segments to find examples of esthetic beauty and lack of it. Can you agree on what constitutes beauty and ugliness? How could you make the distinction clear to children? You will find articles in Journal of Aesthetics and Art Criticism helpful.

2. Many educators believe that the trend toward ugliness can be stopped only as Americans become more aware of the lack of beauty in their environment and come to realize that such conditions need not be. Invite to your class an architect who is interested in city planning, to talk about some exciting developments in cities like Rochester, New York. What are the implications to be drawn from city planning for the elementary curriculum? How could a curriculum integrating social studies and art deal with the problems of deteriorating cities and countryside? What topics in the social studies curriculum lend themselves to such integration?

3. Current developments in curriculum in California have implications for music and art education that specialists in these areas fear. Beginning in 1965, California law requires the teaching of a foreign language in grade six, and in grades seven and eight in succeeding years. While language instruction is desirable, its place in the school day is being found by reducing instruction in music and art. Since these subjects are too often regarded as "frills," they are the first to go whenever time or budget is tight. Defend the inclusion of these subjects in the curriculum and suggest how the practical problem of scheduling might be solved.

4. Suppose a teacher has some pupils who continually color or paint the same scene. It might be a neat, conventional house, set in the middle of the paper, with a chimney out of which smoke is pouring, a sidewalk bordered with flowers leading up to the front door of the house, a tree on either side of the house, grass at the bottom, sky at the top, with the space between untouched. The teacher would like to see her pupils do some creative paintings instead of such stilted ones. Several of the following procedures might help her get results. Which ones are they?

a. Have a directed art lesson in which pupils are instructed step by step on how to draw something different.
b. Encourage pupils to do a good job of fingerpainting, in which there is no emphasis on having a picture look like something.

    c. Display samples of art done by other children and urge her pupils to paint the same kinds of pictures.

    d. Evaluate her program to make sure that her pupils are having the kinds of experiences in the way of trips, stories, and the like that lead to creative art work.

    e. Encourage children to make designs in color, using the paints freely, and with no attempt to "make a picture."

Defend your selection of procedures. Read V. D'Amico, F. Wilson, and M. Maser, Art for the Family (New York: Simon and Schuster, Inc., 1954), for help.

5. Should children ever be taught how to draw anything? When, if ever, should a pupil receive instruction in a specific skill? What does a teacher do when a pupil says, "How do you draw a boy running?"

List some guiding principles that will help in answering these questions. The readings on art education listed at the close of the chapter will help.

6. The development of taste in art and music is an increasingly important problem in a world where the child is continually exposed to so much that is trite, ugly, or contrived. The level of the teacher's own taste is an important consideration here, for children are influenced by what the teacher values. The teacher who accepts only the classical composers such as Beethoven, or the Renaissance and Impressionist artists such as Raphael and Renoir, will probably not attempt to develop in pupils a taste for Stravinsky and Klee.

Select a modern composer such as Stravinsky or Hindemith, or a modern artist such as Klee or Mondrian. Find out as much as you can about the characteristics of his work. Then listen to recordings or study reprints of the artist's work. How would you present this music or art to children? To what cues would you call their attention? It would be helpful to read H. Read, Education through Art (New York: Pantheon Books, Inc., 1945), for background.

PART IV

Evaluating and Looking Ahead

EVALUATION OF PUPIL PROGRESS

Uses of Information	Procedures Used	Factors Evaluated
To determine how much to expect of pupils	Group tests; Individual tests	Intelligence
To provide for individual differences	Standardized tests; Teacher-made tests	Achievement
To assist pupils in achieving status in the group	Observation; Anecdotal records; Sociograms	Personal-social adjustment
To detect physical defects	Physical examinations; Daily inspections; Health records	Physical status
To identify and develop pupil interests	Interest inventories; Observations; Readings record	Interests
To help pupils develop wholesome attitudes	Attitude scales; Observation; Written work; Conversation	Attitudes
To help pupils develop effective work-study skills	Published tests; Observation; Written work	Work-study skills
To identify and encourage creative talents	Intelligence tests; Observation; Oral and written work	Self-expression
To develop critical thinking	Published tests; Observation; Oral and written work	Critical thinking
To promote home-school-community cooperation	Interviews; Questionnaires; Community surveys	Home and community backgrounds

The first chapter in Part IV deals with the problem of evaluating pupil progress and reporting to parents. Like the chapters in Part III, this chapter is concerned with the why, the what, and the how. It begins with an explanation of why it is important to evaluate pupil progress; it identifies the facets of pupil progress that should be evaluated; and it suggests procedures that can be used to evaluate pupil progress in each of these important areas of child development. The chapter ends with an explanation of why the school should report to parents, what should be included in these reports, and how the function of reporting to parents is accomplished.

The last chapter is both a summary and a forecast. It takes a look at current trends in the culture and in elementary education, and it forecasts some changes that are likely to occur in the foreseeable future.

Evaluating
Pupil Progress

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Knowledge of facts is not enough, yet much school evaluation is based on the testing of factual information. While essay tests are hard to grade and records of observed behavior do not lend themselves well to standardization and statistical analysis, they may contribute more to the student's understanding of his progress in learning that does comparison with a norm.
—Association for Supervision and Curriculum Development, *Perceiving, Behaving, Becoming* (Washington, D.C.: The Association, 1962), p. 250.

The experience of having his progress evaluated represents one of the most influential factors in the child's development. It determines to a great extent whether he will strive for real understanding or be content with memorizing answers; whether he decides that honesty is the best policy or that cheating will improve his marks; whether he learns to cooperate for the common good or to take advantage of his classmates; and whether he forms the habit of evaluating his own progress or of depending upon others to tell him whether he has passed or failed.

The older instructional practices were based on the idea that learning consisted primarily of the acquisition of knowledge and skills, and evaluation was limited to paper-and-pencil tests. Newer instructional practices have grown out of a newer psychology of learning, which emphasizes the modification of behavior, continuous growth, multiple learnings, and insight. In harmony with this concept of learning, evaluation is concerned not only with the subject matter learned but with attitudes, interests, work habits, physical development, and personal–social adjustment as well.

It has been suggested in earlier chapters that the type of elementary school program demanded by our times involves a better understanding of the nature of learners and the learning process, a closer identification of edu-

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cation with the demands of living in contemporary American society, and the development of teaching procedures that take into account the broader objectives of the modern elementary school. The broader objectives of the modern elementary school include command of the fundamental processes, preparation for democratic citizenship, releasing the creative abilities of children, and fostering physical and mental health. The teacher or principal who is adequately prepared to participate in the development of this type of elementary school program needs a thorough understanding of the principles and procedures involved in a modern program of evaluation of pupil progress.

THE MEANING OF EVALUATION

The term "evaluation" refers to the accumulation of comprehensive evidence concerning the abilities, status, and problems of children by means of formal as well as informal procedures. It includes also the process of organizing and interpreting this information into a comprehensive description of the child against the background of his educational experience. The purpose of the whole procedure is, of course, to enable the teacher to provide educative experiences for which the child is ready and which meet his developmental needs.

The use of the term "evaluation" does not in any sense discount the value of educational measurement. Evaluation is a more inclusive term than measurement. Measurement is restricted to the quantitative aspects of education, whereas evaluation includes both the quantitative and the qualitative aspects. Furthermore, evaluation involves the use that is made of information obtained through measurement. Progress toward the achievement of some educational objectives can be measured; for other objectives we must evaluate or appraise pupil progress.

PURPOSES OF EVALUATION

The general purposes of evaluation in the elementary school are as follows:

1. To reveal to teachers what is happening to each child;
2. To motivate learning through furnishing pupils with information concerning success in various areas of the curriculum;
3. To furnish teachers with a means of appraising teaching methods, textbooks, and other instrumentalities of the educative process;
4. To provide a basis for continuous improvement of the curriculum;
5. To give pupils experience in evaluating their own progress;
6. To reveal the progress the school program is making toward the achievement of the accepted objectives.

AN ADEQUATE PROGRAM OF EVALUATION

The program of evaluation must be worked out through cooperative study and planning by the staff of each elementary school in terms of the needs of the local community and the children in the school. Several general principles, however, can be used as guides for the development of the program.

Objectives and Activities of the Curriculum

First, a comprehensive list of objectives is worked out by the teacher and pupils for the unit or assignment undertaken. These must be in harmony with the general objectives of education accepted by the school. Next, the activities through which the objectives are to be achieved are selected. The evaluation procedures used will be determined by the nature of the objectives and the activities. Thus, objectives, activities, and evaluation are dynamic, continuous, and integral parts of the educative process.

To the extent that objectives, learning activities, or evaluation become independent, they become formal and unrelated to the teaching-learning situation. Failure to realize the relation between objectives, activities, and evaluation has resulted in a program of teacher education in which the prospective teacher studies philosophy of education (objectives) in one course, methods of teaching in another, and evaluation in another. In public school practice it results in one group formulating objectives and another group doing the evaluating. Consequently, tests are frequently given to pupils on materials they have not studied. Pupil progress should be evaluated by the persons immediately concerned with the education process—the teacher, the pupils, the parents, and the local school staff.

A Comprehensive Evaluation Program

The objectives of the traditional elementary school were, as we have pointed out, narrow and restricted primarily to the mastery of textbooks. The evaluation procedures used were correspondingly narrow, consisting primarily of paper-and-pencil tests. Much progress has been made in developing broader objectives and a greater variety of learning experiences, but progress in developing and using evaluation procedures to match the newer objectives and methods has been slow.

The evaluation of academic achievement is extremely important, but evidence concerning personal–social adjustment, physical development, habits of work, interests and attitudes, special aptitudes, growth in creative ability, and home and community background must also be available if the school is to do the best job possible in fostering the wholesome growth of children and preparing them for effective living in a democratic society.

Modern evaluation procedures attempt to obtain as complete a picture as possible of the individual. Although it is necessary to sample different aspects

of behavior at different times by using a variety of instruments and procedures, interpretations of behavior relating to specific goals must be made in terms of the total personality. For this reason it is important not only to find instruments and procedures that yield accurate information concerning the various aspects of child growth but also to interpret these various indexes of behavior against the whole educational background of the child.

Continuous Evaluation

Evaluation is not something that is done after teaching has been completed; it takes place simultaneously with teaching and learning. This is the kind of evaluation that is found everywhere in life except in certain classrooms. Compare the evaluation of a new employee in a hardware store with the kind practiced in many schools. If the owner of the store used the procedure common in classrooms, he would put the new man to work and for four-and-one-half months would pay no attention to his progress. Then, at the end of the period, an entire week would be set aside for evaluating the new employee. The doors of the store would be locked and no selling would go on until the employer decided whether or not the new man could answer 70 percent of the questions he had asked him. Anyone who has owned a hardware store or worked in one knows that the above procedure is not used; yet anyone who has taught in a school or has attended one will recall experiences with evaluation procedures corresponding roughly to the above description.

The evaluation process should go on during all the time that the teacher can observe the pupil, and not merely at stated intervals when tests are given or report cards sent to parents. Not only results of paper-and-pencil tests but every detail of behavior that the teacher can observe should be material for the evaluation process. It is during the elementary school period that the process of evaluation reveals differences in aptitudes, abilities, achievements, interests, and environmental backgrounds that determine to a large degree the educational needs of high school and college youth.

Cooperative Evaluation

Pupils should be encouraged to engage in self-evaluation. This represents an important phase of the child's education. Failure to develop in children both the desire to and the ability to evaluate their own progress or at least to participate, under the guidance of the teacher, in the process has resulted in many types of educational weaknesses. It has produced high school and college youth who must always wait for the verdict of the instructor concerning their progress—even graduate students who constantly ask instructors, "Is this the way you wanted it done?" It is responsible for much of the cheating on examination for the purpose of deceiving the instructor and getting a higher mark. Furthermore, an authoritarian system of evaluation is hardly conducive

to the development of a nation of adults capable of assuming the responsibility for their own behavior and habituated to evaluating their own efforts—characteristics essential in a society that gives allegiance to the democratic ideal.

Grim [1] mentioned several advantages of pupil participation in evaluating progress. The pupil learns to become increasingly independent in appraising his own progress, problems, and growth. Through daily sharing and participating in the total learning process, he will use the data gathered in the evaluation program to guide his progress more effectively toward his goals. It is, therefore, not necessary for the pupil to wait for a monthly grade or report to determine his growth status or pattern. The school is serving a vital function when it enables the pupil to learn better how to judge and place values upon his daily adjustment to life.

Continuous Curriculum Improvement

Many elementary schools have embarked upon ambitious testing programs. The data have been tabulated and treated statistically to determine the range, the median, and the standard deviation for each subject at each grade level. These results have been filed for future use or perhaps published in an educational journal, while the program of instruction has continued as static and as rigid as before. And this practice frequently has carried the title of educational research.

Educators have been charged, with some justification, with publishing more research studies that have no relationship to needs of practitioners than all of the other professions combined. Research and experimentation are necessary, of course, in public education, but research that warrants its cost must result in the improvement of educational opportunities offered to children.

Evaluation should be concerned with the progress pupils are making in the direction of the values sought for them. Every phase of the curriculum should, therefore, be under constant evaluation in terms of the major values sought. The curriculum organization should be flexible enough to enable each teacher to change a course of action whenever the results of evaluation indicate that a change is desirable. If evaluation reveals that several pupils in the third grade are not ready for the reading materials that are in use, the teacher should feel free to give them reading materials for which they are ready; if evaluation reveals that the arithmetic content is too difficult for certain pupils, the teacher should feel free to adjust the program to their needs and abilities, regardless of grade standard or minimum essentials.

Some teachers are using evaluation for still a different purpose. They are evaluating pupil growth to help decide questions of content and method

[1] Paul R. Grim, "Youngsters Take a Hand," *Educational Leadership*, April 1947, pp. 438–441.

of teaching. For example, a school system had been debating whether to change from a basal to a cobasal reading system, in which they would use more than one reading text. Some of the first-grade teachers were in favor of the change; some were not. Ten of the teachers decided to do some research to see which way was better. The new system was tried in five of the classrooms and the children in these classrooms matched with children of similar intelligence and social-class background in five classrooms using the other method. A committee of first-grade teachers planned evaluation techniques to include standardized reading tests, a record of free reading, and anecdotal records that might reveal attitudes toward reading. At the end of the year, an evaluation expert from the state university helped them to apply statistical procedures to see whether one method of teaching reading had been more effective than the other.

Sometimes an individual teacher rather than a team does research upon a curriculum problem. Miss Densford was interested in seeing whether a social-studies unit she had carefully planned would have any effects upon the ability of her seventh-grade class to think critically. She tested the pupils first before she began teaching the unit and then following her teaching.[2] Then she treated the raw scores statistically to see whether there was a greater than chance difference in achievement before and after her experiment.

Teachers in many parts of the country are finding that the study of curriculum problems using the same techniques as the research scientist is an exciting and rewarding venture. This is not an activity for all teachers, but those who are interested will find that materials are beginning to appear in the literature which will help them with the practical problems of conducting research in the classroom.

FACTORS TO BE EVALUATED

The final criterion by which school practices must be evaluated consists of what is happening to the child. It is the function of evaluation, therefore, to reveal the potentialities of each child, the factors that are promoting and retarding his progress, and a factual basis upon which the teacher can determine educational experiences that will best meet his needs. In the following pages ten major factors in pupil growth are examined. An effort is made to give at least a partial answer to three questions regarding each factor: (1) *Why* is it important to evaluate this factor in pupil growth? (2) *What* specific items relating to this factor need to be evaluated? (3) *How* can the teacher evaluate the growth of pupils in terms of this factor? It should be understood, of course, that these factors of pupil growth are interrelated and that the teacher has the responsibility for interpreting and synthesizing the

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[2] O. Buros, *Mental Measurements Yearbook* (Highland Park, N.J.: Gryphon Press, published annually), is an invaluable source of help in selecting tests.

information obtained into a composite picture of the child against the background of his total learning environment.

Mental Ability or Academic Aptitude

Few problems in education have aroused more controversy than the nature of intelligence, the relative influence of nature and nurture on intelligence, and the quality that is actually measured by intelligence tests. It is easy to become so involved in a theoretical discussion of these problems that the more immediate problem of what use to make of information relating to the abilities of children is entirely overlooked. This is not to say that the problems listed above are unimportant. In addition to gaining a clear understanding of these problems, however, the teacher in the modern elementary school has the obligation to use information relating to the abilities of his group of children in such a manner as to foster the optimum growth of each toward the realization of those personal and social values for which the elementary school in democratic society accepts responsibility. What the teacher needs is not merely a single index of the general mental ability of the child but information concerning the various types of ability he may possess. Very little progress can be made toward individualizing instruction in the several curriculum areas until information is obtained regarding the various aptitudes of the children involved. Each pupil needs to be evaluated to determine the educational directions and distances he is best equipped to travel. Instead of a single grade standard for reading, for example, the teacher needs information concerning the reading achievement that can be expected from each child.

Evaluation of the abilities of children in modern elementary schools is for the purpose of guidance rather than selection. At a time when 75 to 80 percent of the youth of high school age are in school, and when some state universities are required to admit anyone possessing a high school diploma, the need for evaluation for the purpose of *selecting* students is extremely small. The teacher in the public schools and colleges has been deprived of the right to say "no" to the plea of any individual for educational opportunities. This right is reserved for a minority of institutions of higher learning and a relatively small number of private schools at the elementary and secondary school level. The function of evaluation in this situation is to determine as objectively as possible the kind of educational opportunities from which the individual can profit most.

The oldest and best known instruments in this area yield a single index of mental ability—the intelligence quotient. The Terman-Merrill revision of the Stanford-Binet Scale is regarded as a good single measure of intelligence. Since this is an individually administered test and requires the services of an expert, most schools can use it only for special cases, if at all. The Otis Quick-Scoring Mental Ability Test, the Kuhlmann-Anderson Tests, and the Pintner

General Ability Tests are widely used for group testing of general mental ability.

Many schools prefer tests that provide information concerning both language and nonlanguage factors of scholastic aptitude. The California Test of Mental Maturity and the Cornell-Coxe Performance Ability Scale are examples of this type.

Care must be taken in interpreting the results of intelligence tests. An intelligence test cannot measure capacity but only intellectual functioning. Many children from impoverished environments, denied the advantages of experiences in early childhood that would provide them with the percepts and concepts that contribute to the growth of intelligence, do not perform well on tests of intelligence. Yet phenomenal gains have sometimes been reported after such children have been exposed to an enriched environment for a year or more.

While we do not have reliable evidence as yet on changes in American intelligence, two interesting trends have been noted. One is the drop in children's intelligence quotients reported in large cities as upper- and middle-class families move out to the suburbs or place their children in private schools. The public schools in cities like New York and Los Angeles are now enrolling a majority of lower-class children, many of whom come to school not knowing the English language, or come from homes where opportunities for "book learning" and a drive to do well in school are lacking. Because these children score low on intelligence tests, it should not be assumed that they are stupid and cannot learn. It does mean that schools enrolling such pupils have a heavy responsibility to provide a rich learning environment that will help to compensate for their impoverished backgrounds.

Evaluation of Achievement in the Various Curriculum Areas

Since the program of the elementary school has been extended and enriched, the need has been increasingly recognized for evaluation procedures that measure more than the memorization of facts and the development of mechanical skills. Techniques for measuring factual knowledge and fundamental skills have been worked out and used fairly well in classrooms, but, too frequently, teachers have assumed that after they had measured factual knowledge and skills there was nothing left to measure. In traditional testing procedures, very little emphasis was given to the measurement of understanding. There is no question about the importance of measuring progress in the fundamental skills and in other phases of the conventional school subjects, but understanding is also important, and, unless teachers learn how to evaluate pupil progress in understanding, in seeing relationships, and in making practical applications of facts and skills learned to the solution of problems of living, these important aspects of the education of the child will continue

to be neglected. Some of the procedures used in evaluating achievement will be discussed.

STANDARDIZED ACHIEVEMENT TESTS   When used wisely, standardized achievement tests furnish a basis for diagnosis of learning difficulties and focus attention on weaknesses in the curriculum and in teaching procedures. Certain limitations of these tests must be kept in mind, however. First, the norms are prepared on the basis of the median scores of many pupils in many school systems. These may be suitable standards of attainment for the average pupil but too high for slow pupils and too low for pupils who are above average in mental ability. Second, it is difficult to find a standardized test that parallels the objectives and grade placement in the local school. Third, if the teacher believes that he is to be rated on the basis of the scores made by his pupils on standardized tests, he is likely to teach for the tests, to limit his teaching to drill on the textbook materials emphasized by the tests. This misuse of standardized achievement tests has tended to crystallize outmoded methods of teaching, has prevented teachers from taking advantage of opportunities to relate learning to living, and has retarded efforts to make adequate provision for individual differences among pupils. Fourth, unjustified comparisons of one child with another have been made on the basis of single test scores without regard to differences in backgrounds and potentialities for learning. Unwholesome competition of individual against individual and school against school and even teacher against teacher has been fostered by this misuse of standardized tests.

If the limitations of standardized achievement tests are kept in mind, they can be used profitably in those subjects in which grade placement and instructional objectives vary least from classroom to classroom. Even in these subjects such tests should be used for guidance purposes and not for passing or failing, for rating teachers, or for regimenting pupils to a single standard of achievement. Some widely used standardized achievement tests are Sequential Tests of Educational Progress, Stanford Achievement Tests, Progressive Achievement Tests, Metropolitan Achievement Tests, and Iowa Every-Pupil Tests of Basic Skills.

TEACHER-MADE TESTS   A comprehensive treatment of the problem of test construction is beyond the scope of this chapter.[3] Although teacher-made tests usually lack the technical refinement of standardized achievement tests, they should probably be used more widely than they are, for several reasons. Teacher-made tests fit the instructional objectives of the specific group better than standardized tests. The work of constructing objective tests benefits the professional growth of the teacher. The cost of standardized tests limits

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[3] Information is available for this purpose in many excellent books written by specialists in the field of evaluation and measurement. See, for example, Georgia S. Adams and Theodore L. Torgerson, *Measurement and Evaluation in Education, Psychology, and Guidance* (New York: Holt, Rinehart and Winston, Inc., 1964), Chapter 10.

their use in many schools. Standardized tests are available only for whole subjects or large units of subject matter and can usually be adapted for evaluation of achievement only at the beginning and the end of a semester or year. Teacher-made tests can, on the other hand, be used for continuous evaluation.

EVALUATING MORE THAN SIMPLE RECALL   Teachers in elementary schools today can, as the preceding paragraph indicates, obtain a great deal of help with the problem of test construction; they can learn how to construct tests that have greater validity and reliability. More information is also available about the range of possible educational outcomes that need to be considered in the process of evaluating pupil progress. Several developments in this direction deserve special mention.

The need for achievement tests that reveal more than the ability to recall information has long been recognized; the pupil who can recall information frequently is incapable of stating it in his own words or of using it in novel situations. The publication *Bigger and Better Boners* cites many examples of pupils who use words in classrooms with little understanding of their meaning and little ability to use them correctly in sentences.[4] The 1946 yearbook of the National Society for the Study of Education represented a pioneer effort to develop tests that included items designed to reveal understanding as well as those that involved merely simple recall. This yearbook contained illustrative test items designed to evaluate understanding in all the major curriculum areas.[5] Since that time, college texts in the field of measurement and evaluation have frequently contained a chapter on evaluating pupil understandings.[6]

During the two decades following 1946, a great deal of progress has been made toward greater precision in evaluation; toward developing tests that measure progress toward a wider range of possible educational outcomes. An effort has been made to define with greater precision such nebulous terms as *understanding, knowledge, comprehension,* and so on. Bloom and others have developed a set of standard classifications (taxonomy) for this purpose. They state, "Curriculum builders should find the taxonomy helps them to specify objectives so that it becomes easier to plan learning experiences and prepare evaluation devices."[7] They have, therefore, presented a detailed analysis and illustrative test items for knowledge, comprehension, application, analysis, synthesis, and evaluation. The extent to which this taxonomy intro-

[4] Alexander Abingdon (Pseud.), *Bigger and Better Boners* (New York: The Viking Press, Inc., 1952).

[5] National Society for the Study of Education, *The Measurement of Understanding* (Chicago: University of Chicago Press, 1946).

[6] J. Stanley Ahmann, and others, *Evaluating Elementary School Pupils* (Boston: Allyn and Bacon, Inc., 1960), Chapter 7.

[7] Benjamin S. Bloom (Ed.), *Taxonomy of Educational Objectives, Handbook I: Cognitive Domain* (New York: David McKay Company, Inc., 1956), p. 2.

duces more precision into the evaluation process is illustrated by the treatment of the *knowledge* objective. This objective is broken down as follows: knowledge of specifics, knowledge of ways and means of dealing with specifics, and knowledge of the universals and abstractions in a field.

Porter has called attention to the need for evaluating various levels of learning in economic education. He states, "Evaluation is a key factor in helping students gain concepts. A teacher's evaluation techniques and methods largely determine whether his students merely try to learn factual information or sincerely try to gain broad and deep understandings of concepts." [8] He also lists illustrative test items for evaluating the factual level, the knowledge level, the understanding level, the concept and attitude level, and the behavior change level.

Part III of this text has explained how current curriculum-improvement programs emphasize the need for something more than the mastery of isolated bits of information, for understanding relationships, and for learning by discovery. It has been the purpose of the preceding paragraphs to show how the achievement of these goals depends upon the use of more precise instruments for evaluating pupil progress.

Personal–Social Adjustment

Teaching children the basic subjects is a firmly established objective of the elementary school and, according to available objective evidence, the school has, in recent years, been doing a better job of teaching these subjects than has ever been done before. Should the school be concerned also with the kind of person the child is becoming? Should the school help the child to think well of himself? Should it help him to build effective relationships with others? Should the school, in brief, be concerned about the personal–social adjustment of pupils? Current educational theory and practice support an affirmative answer to these questions.

Many competent individuals and groups have recently expressed concern about limiting the responsibility of the school, but it cannot always be assumed that they are not concerned about personal–social adjustment. The Educational Policies Commission, for example, published a bulletin in 1961 which stated that the central purpose of American education should be the cultivation of the rational powers of the individual. The bulletin, however, stated emphatically that the rational powers are not all of life; stated that the individual must be intelligently aware of the role of emotion in his own life and in the lives of others; and recognized the validity of other obligations that the school has traditionally accepted. "The basic American value, respect

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[8] Gerald A. Porter, "The Concept Approach to Education in Personal and Family Finance," in *Family Finance Topics for Teachers* (New York: Institute of Life Insurance, 1962), pp. 4–6.

AN ANECDOTAL RECORD OF ANN—AGE: 6 YEARS, 2 MONTHS. TIME: SUMMER SESSION

Give Terse Accounts of Incidents Showing Growth	First Week	Second Week	Third Week	Fourth Week	Fifth Week	Sixth Week
I						
In caring for health and proper functioning of physical organs through Appropriate food and liquid Note height every 6 months, weight every 3 months, overweight every month	Height—45½ in. Weight—45 lb. Seems well cared for	After discussion of needed liquid, Ann drinks more water — probably due also to heat	Enters discussion of good foods— tells of breakfast of orange juice, cereal, milk			
Suitable clothing and shelter Note comfort and cleanliness Note heat, light, safety, ventilation and cleanliness	Wears more clothing than needed Clean	Weather hot — Ann now wears clean sunsuit each day	New shoes — large enough. Weight bearing line O.K. (heel to big toe)	Very comfortable clothing — hangs from shoulder	Brought dry shoes for rainy day	
Regular and adequate elimination	School program provides for regularity of toilet habits	No record available				
Avoidance of poison from colds, infections, poor food, etc.	No colds or infections evident	Seems well cared for	Hair, nails always clean Carries tissue in pocket	No evidence	Refused unwrapped gum offered by Dan	No evidence

Rhythm of activity and rest	School program offers short rest times. Reports on 10 hr. sleep	Does not seem to be as vigorous as some children. Very alert	After activity rests alone for few minutes	Seems to need short rest period — then rejoins group		

II

In meeting social needs and relationship through Healthy relationship in the group	Shy in group. Close friendship with Betty. Withdraws if several join group	Shyly enters small-group activities. Betty takes care of her	Much more free in group. Pleased to be chosen	Helped plan trip to farm. Contributed	Timid about riding pony — watched and was last one to ride. Other children baby her	Takes turn nicely. Helps another child. Helps plan party
Affection and sense of security	Comes with father and Betty— very secure with them. Later comes with Betty	Delighted that father visited. Waits to go home with him each day	Comes with Betty's father. Secure. Pleased that mother visited. Secure in love of parents	Absent one day— very happy to be back	Shyly affectionate with teacher	More secure daily. Cares for little visitor

III

In meeting personal needs through wide experiences with an increasing amount of self-direction *In investigating and gathering useful facts*	No evidence	Helped care for turtle; asked about food cost. Following conversation found out from parents about fireflies	No evidence	Trip to farm planned. Reported, "No rain, we can go — I heard the weather report" Enjoys books	Reported on ponies day after ride (cost and care). Showed picture	Brought good ideas for party home

Give Terse Accounts of Incidents Showing Growth	First Week	Second Week	Third Week	Fourth Week	Fifth Week	Sixth Week
In gaining "basic skill"	Interest in pictures	Tells story about series of pictures Recognizes names	Good stories about sequence of pictures Locates labels of pictures Counts scissors Wrote name on board	Dictates caption for picture — "Reads" it Seems to memorize well Counts books, children, etc. Enjoys books	Dictates experience story about pony (2 lines) —Enjoys reading it — Interested in cost Likes books Works on writing name on board	Pleased with pre-primer — Can read two pages — Very enthusiastic Counts party materials
In better way of organizing knowledge and using it in thought	No evidence	Told of catching fireflies, D questioned her, next day she brought two in bottle	Moved chair out of way before children started to skip	Discussed trip to farm — especial interest in young animals —Reasoned she could have small pets in city	Inquired about cost of pony— Figured she had no place to keep one but wanted it	No evidence
In creative expression in language, art, and music	Watches children, but enters little	Loves easel painting Uses much color Sings shyly	Crayons—then returns to paint Expresses self well —good vocabulary	Very spontaneous with paint — laughs with children Enters into dance	Creates own simple dance to music Excellent listening attitude	Excellent vocabulary — expresses self well Enjoys dance
In carrying out activities	Follows suggestions shyly	Enters most group activities — Seems tired near end of school	Persistent worker — good attention — Grows tired of woodwork but returns to finish it	Serves well on little committee Not as vigorous as some children Attention span long	Persists in woodwork in spite of L's influence to stop	Helped party plans — Took responsibility well — A little shy when guests came
In broadened interests and more clearcut attitudes		Much interest in paints	Evident interest in woodwork and tools	Much interested in farm and young animals	Interested in where other children lived — especially children from other towns — interest in records	Interest in dance records

1. They contribute to an understanding of the personality of each child.
2. They direct the attention of teachers toward individual pupils.
3. They provide information for pupils to use in self-appraisal.
4. They provide new staff members with important information about pupils.
5. They provide appropriate materials to be forwarded with a pupil when he moves to another school.
6. They provide evidences of growth in work-study habits.
7. They encourage teachers to become interested in phases of child growth other than achievement in school subjects.

The limitations of anecdotal records include the following:

1. It is difficult for busy teachers to record behavior incidents accurately.
2. Teachers sometimes use anecdotal records to justify some action on their part.
3. An anecdotal record can include only a small portion of the significant behavior incidents of a pupil. Anyone reading the anecdotal record may get a distorted picture of the total behavior pattern of the child.
4. Many teachers fear that anecdotal records may give the teacher to whose class the child goes the following year a prejudice against the child.
5. Preparing, summarizing, and interpreting anecdotal records is a time-consuming process. Unless the school staff includes a director of guidance or someone with comparable preparation, the writing of anecdotal records should not be undertaken on a large scale.
6. Undesirable behavior is observed more easily than desirable behavior. Teachers should observe and record evidences of normal growth and development even more diligently than evidences of retarded development.

SOCIOGRAMS   A sociogram is a chart of the interrelationships within a group. The purpose of a sociogram is to discover the relation of any one pupil to the class as a whole. Sociograms have been widely used in elementary schools for helping individual pupils improve their social relationships, for reshaping administrative practices, for grouping for committee work, and for grouping for play activities. Some teachers are more alert than others in detecting the status of individual pupils in the group, but all teachers need the help of some systematic device for supplementing personal observation.

Although the sociogram may be very useful in revealing interpersonal relationships among the pupils that the teacher did not detect through observation, it should not be regarded as the final answer. A sociogram may serve as an effective starting point for the study of social dynamics in the classroom, but it should be followed by a careful study of the group structure made from time to time. The teacher should not assume that one sociogram will reveal the class structure over a period of time or that the grouping for

play will be the same as that for class work. The sociogram is a professional instrument to be used only by those who understand its uses and limitations. It will not be worth much unless it is supplemented by other techniques of evaluation and unless definite action is taken to make use of the information gained in helping individual pupils gain status in the group.

Sociograms may be used for a variety of purposes, such as selecting committees to work on a social-studies unit, dividing children into groups for play activities, and planning a school party or program. The first step is to ask the children, "With whom would you like to work on a committee?" Each child is asked to write his own name at the top of a three-by-five-inch card and then to write the names of his first choice, second choice, and third choice. The choices may then be tabulated in the form shown.

The tabulation form of the collected cards provides a great deal of information about the twelve children and constitutes the basic data used in drawing the sociogram. The tabulation and the sociogram together show the isolates, such as Pat, Rose, and Walter; the stars such as Jane and John; and the mutual choices such as John and Robert, Jane and Karen, and David and Robert.

After the tabulation form has been completed, the teacher may construct a sociogram (see the figure) using circles for boys and triangles for girls. If the class is large, it may be advisable to use a cardboard approximately thirty-by-thirty-inches for the drawing. The general procedure is to locate the "stars" near the center and the "isolates" on the periphery to minimize the number of long lines and the number of intersecting lines.

The teacher can use the information revealed by the sociogram for the purpose of locating pupils who have not achieved status in the group and for helping them overcome handicaps that prevent them from gaining acceptance by their peers. More complete information concerning the construction and use of sociograms can be obtained from several sources.[15]

The Physical Status of Pupils

Teachers are concerned with evaluating the physical status of pupils because it determines the amount of energy available for school work and other activities, it is related to the social and emotional adjustment of the pupil, and it accounts to a large extent for the pupil's success in every part of the school program. If every child could be examined by a physician every day of the school year, it would be unnecessary for teachers to be concerned with this type of evaluation. Since this is obviously impossible, teachers must accept the responsibility for the detection of physical disorders that interfere with normal growth and educational progress, as well as for fostering a positive approach to healthful living.

[15] See Horace Mann-Lincoln Institute of School Experimentation, *How To Construct a Sociogram* (New York: Bureau of Publications, Teachers College, Columbia University, 1950).

TABULATION FORM SHOWING THE CHOICE
OF SEVEN BOYS AND FIVE GIRLS

Chooser	Chosen	David	Jane	John	Karen	Martha	Pat	Robert	Rose	Stephen	Stewart	Susan	Walter	
David				1			2				3			
Jane				3	1	2								
John		2					1				3			
Karen			1			2						3		
Martha			1								2	3		
Pat			3	1-					2					
Robert		2		1					3					
Rose			1		3						2			
Stephen		2		1			3							
Stewart		2	3	1										
Susan			1	3	2									
Walter				3						2	1			
Chosen as:														
1st choice		0	4	5	1	0	0	1	0	0	1	0	0	
2d choice		4	0	0	1	2	0	1	0	2	1	1	0	
3d choice		0	2	3	1	0	0	1	0	1	2	2	0	
Total		4	6	8	3	2	0	3	0	3	4	3	0	

Adapted from Helen Hall Jennings, *Sociometry in Group Relations* (Washington, D.C.: American Council on Education, 1948), p. 18.

It does not require a great deal of preparatian or special equipment for teachers to be able to detect the symptoms of common physical disorders and to call attention to the need for an examination by a physician. Teachers need to know how to check on general health; height and weight (considered in relation to race, nationality, and heredity); posture; symptoms of nervous disorders; cleanliness and suitability of clothing; and the condition of eyes, ears, nose, throat, chest, arms, legs, neck, face, lips, hair, scalp, teeth, back, and feet.

A SOCIOGRAM BASED ON THE DATA PRESENTED
IN THE TABULATION FORM
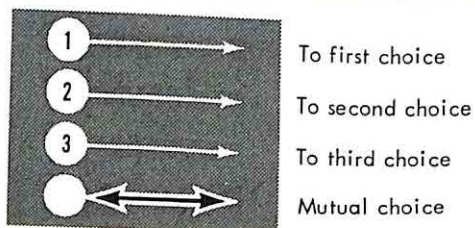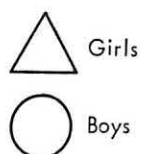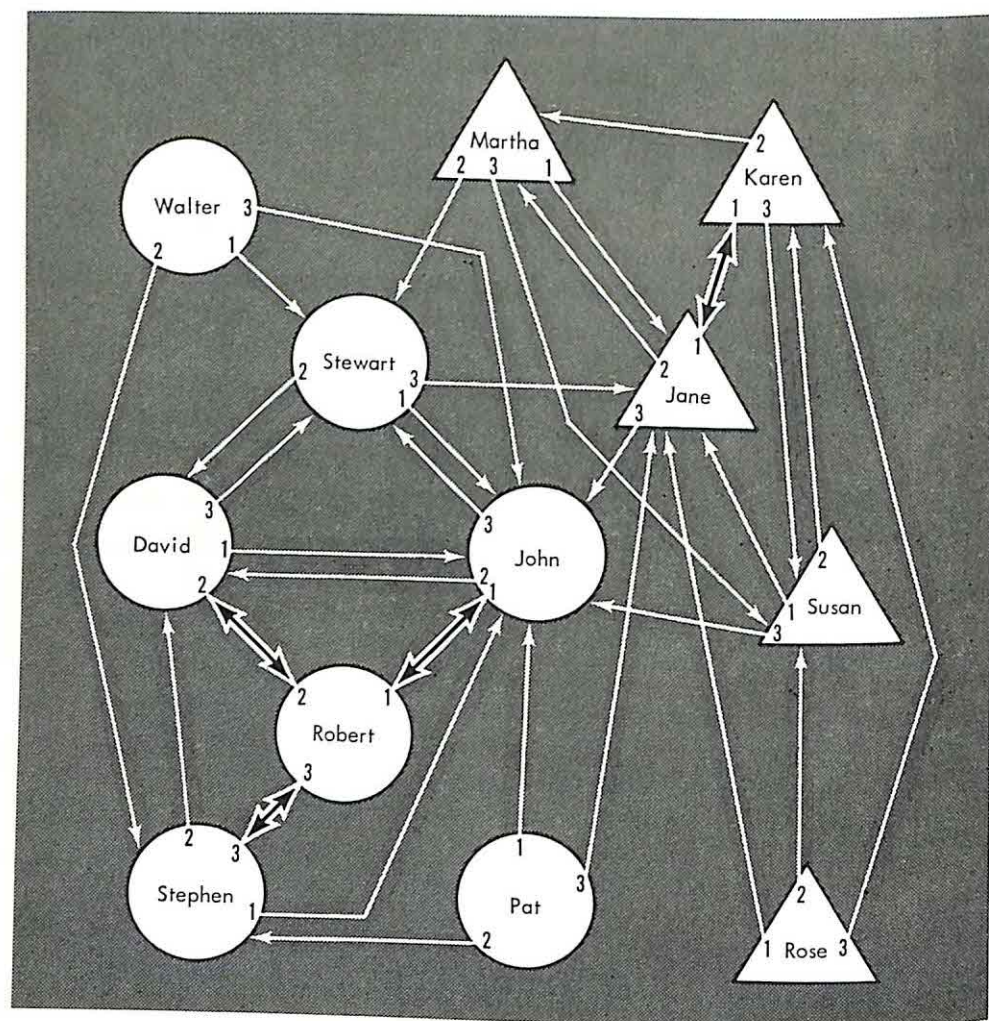
Procedures and instruments used for evaluating the physical status of pupils include a complete physical examination by a physician, daily inspection by the teacher, adequate health records, the clinical thermometer, the audiometer, the whispered speech test, the watch-tick test, the Snellen Chart, the Eames Eye Test, and the Betts Telebinocular.

Evaluating Growth in Interests

Since learning is more rapid and more lasting and has more valuable concomitants when it is based on pupil interest, and since teachers have a responsibility for helping pupils develop more worthwhile interests, it follows that teachers need to be concerned with procedures for evaluating the interests of pupils.

Children's interests in people, in books, in the natural enviromnent, in games, and in various kinds of activities need to be evaluated. The dimensions of children's interests also need to be evaluated. These include range of preferences or variety of interests, range of participation or variety of activities, and intensity or depth of interest in any specific activity.

Procedures for evaluating growth in interests include analysis of books borrowed; questionnaires or inventories in which the child is asked to list the books he has read, the activities in which he has engaged, and his preferences among them; and teacher observation of the activities in which children engage, the games they like to play, and their favorite topics of conversation.

Evaluating Growth in Attitudes

The school cannot escape concern with the attitudes that children develop both in and out of school. The child's attitudes toward his playmates, his teacher, his parents, and toward social customs and institutions are all related to his mental health. Behavior does not result from the intellect alone; it results from the individual's background of attitude patterns and experiences. The child's attitudes affect what he learns, what he remembers, what he thinks, and what he does. Hence, evaluation of the child's attitudes—his feelings for and against things—assumes a fundamental role in guiding his development.

Formal instruments for evaluating attitudes are limited primarily to the high school and adult levels. However, attitude scales and questionnaires can be adapted for use in the elementary school. These may be supplemented by evidence recorded informally by teachers from observation of pupil's actions, conversations, discussions, and written work.

Evaluating Growth in Work-Study Skills

The development of effective skills for learning is coming to be regarded as one of the most important functions of the elementary school. These skills, rather than the amount of information he has stored up for future use, will

determine to a large extent the child's future success, both as a student and as a citizen. The development of these skills is especially important in the upper grades of the elementary school. Work-study skills include the ability to read maps, charts, graphs, and tables, to use the table of contents and index of a book, to locate books in the library by use of the card index, and to outline, organize, and tabulate data.

Some of these skills are included in achievement tests in reading. Others may be evaluated by means of such tests as the Iowa Every-Pupil Test of Basic Study Skills and the Pirtle Library Test 6B. Informal methods of evaluating growth in work-study skills include observation of pupils in committee work, problem solving, and group discussions, observing samples of written work of pupils, and checking on pupils' skill in the use of the library.

Evaluating Growth in Creative Self-expression

Elementary school teachers and principals are becoming increasingly aware of the responsibility for fostering creative self-expression in pupils. They realize that adjusting effectively to our complex society and contributing to social progress require individuals who are creative in their approach to people, situations, problems, and materials. The development of creative abilities represents one of the most important contributions of the school to the building of a better social order and to fostering the mental health of children.

The development of creative abilities is an objective of many, if not all, parts of the curriculum. It may consist of the ability to express original ideas through art or music; to plan and perform unique experiments in science; or to plan and carry out an enterprise in group living. Evaluation of growth in creative self-expression is, therefore, an aspect of evaluation in all areas of the curriculum. Since creative ability is seen in terms of the child's own standards, it is particularly difficult to evaluate by means of formal instruments and procedures. Teachers need to develop criteria for evaluating creative efforts, such as the originality of ideas used in written work or art; variety of ideas expressed; and richness, ease, and finish of expression. Evaluation of growth in creative expression consists largely of preserving pupil products in language, art, and science, and of observation of pupil behavior.

Evaluating Growth in Critical Thinking

Almost every teacher realizes that one of his responsibilities is to help children learn how to think for themselves in solving real problems. Some teachers, however, confuse critical thinking with the ability to give the answers expected. Critical thinking involves the ability to colect and interpret data; to refrain from drawing conclusions that surpass the data collected; to apply principles and generalizations to new situations; and to evaluate the arguments, ideas, and conclusions of others.

If instructional practices are to foster the abilities involved in critical thinking, methods of evaluating these abilities must be found. Several tests relating to the development of critical thinking are available at the upper elementary school level. One of the best is a Test of Critical Thinking in School Studies (Bureau of Publications, Teachers College, Columbia University). It measures the ability to obtain facts from graphs, maps, references, newspapers, and magazines; the ability to draw reasonable conclusions from facts collected; and the ability to apply generalizations to new situations.

Evaluating the Home and Community Background of Children

Intelligent guidance of the child in school involves an understanding of the total learning environment to which he has been exposed. It is not only true that the whole child comes to school; it is also true that he brings his home and community background with him.

Information concerning the home background of the pupil, which the school should assemble and use, includes the attitude of the parents toward the school, parent-to-parent relationships, parent-to-child relationships, child-to-child relationships, and socioeconomic status. Information concerning parents should include amount of schooling, occupation, health, birthplace, citizenship, and language spoken. Information concerning the community should include economic conditions, customs and traditions, facilities for recreation, and community resources that can be used for instructional purposes.

Methods of obtaining information concerning home and community background include interviews, questionnaires for parents to fill out (if children are very young), questionnaires for pupils to fill out, and community surveys.

CUMULATIVE RECORDS

The "cumulative record" is the form used in the modern elementary school for gathering and maintaining those facts about each child from which a well-rounded impression can be gained concerning his growth and development toward all the objectives for which the school accepts responsibility. Such records are indispensable in a school that recognizes individual differences in abilities, interests, and backgrounds of pupils; regards education as a process of continuous growth; accepts the responsibility for providing individual guidance rather than merely instructions on the "class-as-a-whole" basis; and attempts to use evaluation procedures in harmony with the broader objectives of the elementary school.

The staff of one Texas school has published a bulletin that describes the type of cumulative record maintained for each pupil and the relationship between these records and the procedures employed in grouping, marking,

ment has expanded to include tests designed to provide objective evidence in regard to almost every conceivable aspect of teaching and administrating. As early as 1940, the authors of a well-known text in the history of education stated, "The popular confidence in tests is today, if anything, too great." [20] The same authors warned against endowing a given test with prestige and authority "far beyond its true deserts." The testing controversy has been building up gradually for the past quarter century.

The current concern about the influence of testing, particularly about nation-wide testing programs, is demonstrated by the number of articles that have been appearing in educational journals and in books and magazines serving the population in general. These sources reveal that the testing movement has expanded rapidly since Sputnik; that more young people than ever before are wanting a college education; that colleges and universities have been placing more emphasis on an impersonal test score than on more personal evidence in admission policies; and that the college entrance hysteria has even increased tensions among parents of elementary school children.

Five departments of the National Education Association cooperated in the preparation of a pamphlet, published in 1961, which emphasized the child's right to be different, deplored the trend toward impersonality in school programs, and suggested that any innovation should be evaluated in terms of what it does for the individual pupil. The pamphlet pointed out that at no time in history have schools placed so much faith in tests made by agencies outside the school system. It raised this question: "If the individual pupil counts, is good or evil to be found in a barrage of standardized tests, college board examinations, searches for talent, state-wide examinations, and national survey tests?" [21] A professor of mathematics at a university in New York has been especially critical of standardized achievement tests that have a tendency to penalize the bright and imaginative pupils and to reward the uncreative ones.[22] An article in a bulletin of the Association for Higher Education points out that high school seniors spend a disproportionate amount of time taking tests on the basis of which only a few will be selected for scholarships; that so much testing puts undue pressure on students and their parents; that some evidence exists that cheating, suicides, and hypertension in the adolescent population correlates with the pressures of the academic scene; and that ways should be found to test disadvantaged students so that their real potential will be revealed, as contrasted with potential distorted by cultural dis-

[20] J. D. Russell and C. H. Judd, *The American Educational System* (Boston: Houghton Mifflin Company, 1940), p. 460.
[21] American Association of School Administrators, Association for Supervision and Curriculum Development, National Association of Secondary School Principals, National Department of Elementary School Principals, and NEA Department of Rural Education, *Labels and Fingerprints* (Washington, D.C.: National Education Association, 1961).
[22] Banesh Hoffman, *The Tyranny of Testing* (New York: Crowell Collier and Macmillan, Inc., 1962).

advantages. The author points out, however, that most of the responsibility for the malfunctioning of testing lies with the users rather than with the test designers.[23]

Snider has presented an excellent analysis of the current widespread concern on the part of both lay and professional people about externally prompted national testing programs. Although his article deals with testing programs in secondary schools, his analysis of the situation applies also to testing programs in elementary schools. For example, he identifies seven major uses of standardized tests as follows: (1) to evaluate the effectiveness of classroom teaching, (2) to plan for curriculum improvement, (3) to identify pupils of superior and inferior academic ability or talent, (4) to serve as a basis for instructional classification or grouping, (5) to facilitate the total guidance and counseling process, (6) to improve articulation throughout the school, and (7) to serve as a basis for selective college admission. All of these major uses, with the possible exception of (7), apply as well to elementary schools as they do to secondary schools.

He pointed out that national testing programs are not likely to contribute to more than two or three of these major purposes; that standardized tests do not measure all important educational objectives; that tests are too frequently used to catalogue pupils at a specific level of ability; that there is too much duplication in externally imposed testing; and that present testing practice encourages too early prediction of pupil success and too rigid classification of pupils. His article provides more constructive suggestions for eliminating the misuses of tests than do most of the recent articles on this subject. He suggests that teachers and administrators should become much more competent in the interpretation and use of test results; that we need to develop tests which place more emphasis on creativity, discovery, and independence in learning; that professional organizations should continually inform the public of the values, limitations, and abuses of testing programs.[24]

One aspect of the testing movement that has aroused much opposition has been the use of personality tests. William H. Whyte has been highly critical of the use of these tests by corporations for the purpose of selecting personnel who conform to the image of the *organization man*—the conforming man, who would cause few problems and create few new ideas.[25] Whyte also called attention to the tendency of pupils in school to give the expected answer to test items rather than the answer that expressed their feelings.

The influence which a nation-wide testing program can exert on the determination of curriculum content has also been causing much concern.

[23] Lewis B. Mayhew, "The Testing Controversy," *College and University Bulletin* (Association for Higher Education, National Education Association), February 15, 1964.
[24] Glenn R. Snider, "The Secondary School and Testing Programs," *Teachers College Record*, October 1963, pp. 57–67.
[25] William H. Whyte, *The Organization Man* (New York: Simon and Schuster, Inc., 1956).

Critics point out that whatever is included in tests that pupils must take determines to some degree what will be taught. When one of the great foundations is provided with funds from the federal government to develop tests to be given in all elementary and secondary schools, the legally responsible agencies—state boards of education and local school boards—no longer have control of what is taught in the schools. Critics point out that this constitutes an indirect approach to a national curriculum without any systematic effort to give the people most concerned an opportunity to accept or reject the idea.

Current criticisms of the uses of tests should not be allowed to obscure the fact that the testing movement has made tremendous progress during the last half century. True-false test items have been largely replaced with more flexible multiple response items; intelligence tests yielding a single score have been replaced with tests that recognize that there are many kinds of intelligence; and the major testing companies have provided valuable services to school systems in relation to the problem of evaluating pupil progress. A test must be judged in terms of its relevance to what it purports to do. Many of the criticisms of tests arise from the way the tests results are used rather than from weaknesses inherent in the instrument itself.

IMPROVING REPORTING PRACTICES

The improvement of practices in reporting to parents on the progress of the child in school is an integral part of curriculum improvement. These practices influence the child's personal–social adjustment, serve as goals toward which people work, and indicate to parents what the school considers to be important in the growth and development of children. Accurate and diagnostic reports of pupil progress provide a basis for mutual understanding, good will, and cooperation between parents and teachers in their efforts to improve the total learning environment of the child. The realization that the report to parents may either build good will or destroy it—may either enlist or alienate the cooperation of parents and children—accounts, no doubt, for the increasing amount of attention that is being given by principals, teachers, and parents to the problem of improving reporting practices.

Should S and U grades be used instead of A, B, C, D, E, and F? Should written reports be abolished in favor of parent–teacher conferences? Should there be a different type of reporting system used for the various levels of the school program, such as the primary, intermediate, and upper grades? These questions can be answered satisfactorily only after a thorough study has been made by the principal, teachers, and parents of an individual school. There is no best system of reporting to parents; rather, that system is best that has been developed cooperatively by those concerned, that incorporates the finding of research relating to child growth and development, and that is clearly understood by teachers, pupils, and parents.

The following suggestions may be helpful to groups interested in improving reporting practices:

1. The purpose of reporting to parents is to enlist their cooperation in providing the best educational opportunities possible for the child.

2. The reporting procedure should include an appraisal of the physical, mental, emotional, and social growth of the child.

3. The reporting procedure should emphasize the child's progress in terms of his own abilities and past achievements rather than his standing in comparison with other members of the class.

4. The reporting procedure should emphasize guiding the child rather than judging him.

5. The reporting procedure should reflect a comprehensive picture of the achievement of the child without requiring too much clerical work on the part of the teacher.

6. Report cards should be supplemented by letters to parents, samples of the child's work, parent–teacher conferences, and home visits.

7. The reporting procedure should be consistent with the philosophy of the school.

The Parent–Teacher Conference

The individual conference is regarded by many as the most effective single device for reporting to parents. Many teachers arrange to hold a conference with the parents of every child in the room during the first six weeks of school and as frequently as possible during the remainder of the school year. The value of the conference depends largely upon the preparation the teacher has made for it and the skill used in conducting it. How a teacher talks with a parent has been mentioned first in a list of tasks that teachers must perform, but that are relatively neglected in the preparation of teachers.[26] The task of making adequate preparation for an interview with a parent and of using the right techniques in conducting the interview are far from simple. Unless the preservice education of the teacher has included both theory and practice in the art of conducting interviews, the parent–teacher conference is likely to be unsatisfactory to both the teacher and the parent. If the conference is to be successful in establishing better working relationships between the home and the school, certain basic principles must be observed:

1. The teacher must be relaxed and comfortable and must make the parent feel comfortable also.

2. The teacher should approach the conference with the attitude that the parent can provide much information that can be useful in working with the child.

[26] S. B. Sarason, K. Davidson, and B. Blatt, *The Preparation of Teachers* (New York: John Wiley & Sons, Inc., 1962), pp. 3–5.

3. The parent should have an opportunity to ask questions about how the child is getting along in school, why certain procedures are used in the school, and what the parent can do to help the child make the best use of his opportunities.

4. The teacher should review the child's record before the conference, so he can supply information for the parent and raise specific questions for discussion.

5. The conference should not be regarded as a means of completing a neat plan for working with the child; at best it can provide only a few new insights.

SUMMARY

1. Evaluation of pupil progress is an integral part of the problem of improving the elementary school curriculum.

2. The task of evaluation is not to select and eliminate but to determine the kind of educational experiences that will meet the needs of the child.

3. Evaluation consists of the accumulation of comprehensive evidence concerning the abilities, status, and problems of children by means of formal as well as informal procedures, and organizing and interpreting this evidence into a comprehensive description of the child against the background of his educational experience.

4. An adequate program of evaluation of pupil progress must (a) be closely related to the objectives accepted in the school, (b) be comprehensive, (c) be continuous, (d) be cooperative, and (c) make use of results for continuous improvement of the curriculum.

5. Major factors of pupil growth that need to be evaluated include (a) mental ability or academic aptitude, (b) achievement in the various curriculum areas, (c) personal–social adjustment, (d) physical status, (e) growth in interest, (f) growth in attitudes, (g) work–study skills, (h) growth in creative self-expression, (i) growth in critical thinking, and (j) home and community backgrounds.

6. A cumulative record is the form used in the modern elementary school for gathering and maintaining for constructive use those facts about each child from which a well-rounded impression can be gained concerning his growth and development toward the objectives for which the school accepts responsibility.

7. Accurate and diagnostic reports to parents on the progress of the child in school provide a basis for mutual understanding, good will, and cooperation between parents and teachers in their efforts to improve the total learning environment of the child.

8. That system of reporting to parents that is best for a particular ele-

mentary school is the one that has been developed cooperatively by the teachers, pupils, and parents in terms of local needs and problems.

9. Parent–teacher conferences, when they are properly conducted, constitute effective means of reporting to parents.

10. Recent criticisms of testing programs are directed more toward the misuses of tests than toward weaknesses in tests themselves.

SELECTED READINGS

Adams, Georgia S., and Theodore L. Torgerson, *Measurement and Evaluation in Education, Psychology, and Guidance*. New York: Holt, Rinehart and Winston, Inc., 1964. Explains the uses of standardized tests and teacher-made tests for the improvement of instruction; the measurement of aptitudes, interests and attitudes, and personal–social adjustment. Gives suggestions for administrative, supervisory, and guidance purposes.

Ahmann, J. Stanley, and others, *Evaluating Elementary School Pupils*. Boston: Allyn and Bacon, Inc., 1960. Chapter 7 suggests procedures for evaluating pupil understandings; Chapter 10 deals with the evaluation of personal–social adjustment.

Bloom, Benjamin S. (Ed.), *Taxonomy of Educational Objectives*. New York: David McKay Company, Inc., 1956. *Handbook I: Cognitive Domain* gives sample test items for evaluating several categories of educational objectives; *Handbook II: The Affective Domain* suggests procedures used for classification and measurement of objectives in the affective domain.

Davis, Frederick B., *Educational Measurements and Their Interpretation*. Belmont, Calif.: Wadsworth Publishing Company, Inc., 1964. Suggests procedures for evaluating aptitude, achievement, and interests. The section on "Measurement of Overachievement and Underachievement" is particularly useful.

Gronlund, Norman E., *Measurement and Evaluation in Teaching*. New York: The Macmillan Company, 1965. Explains the role of evaluation in teaching, the relation of evaluation to objectives, constructing classroom tests, using standardized tests, and improving marking and reporting practices.

Langdon, Grace, and Irving W. Stout, *Teacher–Parent Interviews*. Englewood Cliffs, N.J.: Prentice-Hall, Inc., 1954. Contains a comprehensive treatment of factors to be considered in planning teacher–parent interviews.

National Society for the Study of Education, *The Measurement of Understanding*. Chicago: University of Chicago Press, 1946. Presents illustrative test items for measuring understanding in the major curriculum areas.

Remmers, H. H., N. L. Gage, and J. Francis Rummel, *A Practical Introduction to Measurement and Evaluation*. New York: Harper & Row, Publishers, 1960. Emphasizes the use of tests in adapting instruction to the differing needs of pupils.

Strang, Ruth, *How to Report Pupil Progress*. Chicago: Science Research Associates, Inc., 1955. Evaluates several forms of reporting to parents on pupil progress.

———, *Reporting to Parents*. Rev. ed.; New York: Bureau of Publications,

Teachers College, Columbia University, 1952. Presents guiding principles for an adequate program of reporting to parents.

SELECTED FILMS

The following represent only a few of the films that are available on measurement and evaluation. The teacher can contact the film service at the state university or state department of education for other suggestions.

Counseling—Its Tools and Techniques. A twenty-two-minute sound film illustrating the use of interviews, records, tests, referrals, anecdotal records, cumulative records, and questionnaires. (Mahnke)

Discovering Individual Differences (Part II of *Elementary School Children*). A twenty-five-minute sound film demonstrating how a fifth-grade teacher used evaluation techniques to gain an understanding of each child and how she adapted her teaching program to meet individual needs. (McGraw-Hill, Inc.)

Each Child Is Different (Part I of *Elementary School Children*). A seventeen-minute sound film demonstrating the complex and different backgrounds, abilities, and needs of fifth-grade children. (McGraw-Hill, Inc.)

Guidance Problems for School and Home. An eighteen-minute sound film that presents a case study of Danny, a child in the second grade, who is socially maladjusted and lacks interest in his school work. Shows how close cooperation between home and school helps solve such problems. (Hartley Productions)

Report on Donald. A nineteen-minute sound film showing how speech defects and a lack of understanding of these defects can lead to social maladjustment. Suggests remedial measures that can help to minimize or correct speech defects. (Columbia University)

Photo Comment

REPORTING TO PARENTS

This cartoon unwittingly illustrates the shortcomings of traditional ways of reporting to parents. Letter grades do not tell the father whether his "stupid" son is doing poor academic work because he is poorly motivated, lacks the basic skills necessary to do successful work in his grade, or is really low in intelligence. If the latter is true, and the boy is doing his best, then grading the boy in comparison with other pupils is, in a sense, punishing him for hard, devoted work.

Many schools are abandoning the traditional report card in favor of teacher–pupil conferences. These enable the teacher to report more fully to the parent on the child's progress and to explore possible reasons for poor progress where it exists. Parent and teacher together can work out a plan for helping the child.

Some schools are substituting a report card that tells the parent how well his child is doing in each subject, in comparison to his ability. Then in a report, which is mailed home to the parent in the spring, the teacher informs the parent on his child's progress as compared to national norms. Standardized test scores are not reported, but parents are informed as to whether their child is "much above the norm", "above the norm", "at the norm", or "below the norm" for his grade.

This information is useful to parents in planning for their children. Some parents who might never plan college for their children are encouraged to think of higher education goals when they discover they have a bright child. Parents whose aspirations are too high for their child can begin lowering their sights if it appears to be necessary. Sometimes remedial work can be planned cooperatively, where scores are low in the light of a pupil's ability.

This information can, of course, be conveyed in a conference and, in fact, might better be so transmitted. Written communications sent out all at once invite invidious parental comparisons and competition.

Cartoon © George W. Kesner, from *Saturday Evening Post*

"According to this, you're a neat, punctual, healthy, well-behaved stupid kid."

Problems and Projects

1. Benjamin Bloom and others in *Taxonomy of Educational Objectives* analyze knowledge into various levels of complexity, with the simplest being knowledge of specific fact and the highest level being those intellectual abilities and skills upon which the use of knowledge depends. The modern elementary curriculum includes specific facts, but facts taught with an eye to application. Read Bloom's analysis of levels of knowledge and then evaluate the three test items below given to a sixth-grade class following its completion of a study of the United States.

   a. Name the principal products of the industrial Northeast.
   b. Which group of explorers opened up the Mississippi Valley and what were the results of their explorations?
   c. Why did the pioneers move west and which routes did they take?

2. To plan effective instruction of children, a teacher must assess present level of development in various areas. A teacher of young culturally disadvantaged children who wants to improve language development should first be aware of deficiencies in language existing in the class. From the work of psycholinguists has come help on how language patterns might be analyzed. R. Brown and U. Bellugi have described three processes in the child's acquisition of syntax: an imitation process where the toddler imitates adult speech, retaining content words like nouns, verbs, and sometimes adjectives, but omits functors like inflections, auxiliary verbs, articles, prepositions, and conjunctions; an expansion process in which adults supply the missing forms; and a process in which the child induces the latent structure of the language (for example, the general rules for forming plurals as when the child says, "two feets."

   Read the paper by Brown and Bellugi, "The Child's Acquisition of Syntax," *Harvard Educational Review* (special issue on "Language and Learning") Vol. 34, pp. 133–151. Then take five-minute samples of language behavior of kindergarten children in a poor neighborhood. Analyze your protocols in terms of contentives and functors. Compare results with samples of middle-class children. What differences do you find? What are the implications for language teaching?

3. The staff of Washington School wants to know how its pupils, taught to read with the "initial teaching alphabet," compare in reading achievement with children taught by other methods. How can the staff go about such a study? What factors must be controlled in selecting a sample? In training procedures? What evaluation measures might be used? Should evaluation include interest in and time spent in independent reading?

4. There are many questions regarding the program of the elementary school for which a teacher has only intuitive answers rather than answers based upon evidence. An elementary principal would like to know how children in a combination second and third grade under a particular teacher will achieve in reading as compared with a group comparable in ability but in separate grades. A first-grade teacher wants information on how well children who have had a particular kind of kindergarten experience compare in achievement with those of similar ability who have had none. Questions such as these that are specific to a particular situation are not answered in the research literature. Other questions, not so specific, have not yet been studied systematically. The past few years have seen an increasing trend on the part of master teachers, using methods of research, to seek answers for themselves.

In planning research on a teaching problem the principal or teacher first proposes a hypothesis or a possible solution to the problem. Then he designs an experiment. He may compare the performance of two different groups of pupils, one of which is being subjected to special treatment and the other of which is not. Or, he may compare the performance of the same group of pupils before and after trying a particular teaching technique. He will make every effort to keep constant all factors except the one that he is testing.

List some unsolved problems facing the classroom teacher or principal. Your observations of, or work with, children in the elementary school will be helpful here. Select one of these problems for special study. State possible hypotheses, predicting the outcome of solutions to the problem. Then describe a research design to test the hypotheses. For help, see the bulletin by Fred P. Barnes, *Practical Research Processes: A Guidebook in Research Methods for Practitioners in Education* (Springfield, Ill.: Office of the Superintendent of Public Instruction, 1964).

The Recent Past
and the Foreseeable Future

Because we now can organize men of high skill and
knowledge for joint work through the exercise of
responsible judgment, the highly educated man has
become the central resource of today's society, the
supply of such men the true measure of its economic,
its military and even its political potential.
—Peter F. Drucker, *Landmarks of Tomorrow* (New
York: Harper & Row, Publishers, 1957), p. 114..

Before presenting some of the estimates of the future of American life and
the school curriculum, it is advisable to take another look at the post-Sputnik
era which was discussed briefly in Chapter 1. The advent of Sputnik ushered
in the "postmodern" period in history; it also ushered in a massive curriculum
reform movement that has been gaining momentum since 1957. Events since
1957 seem more closely related to the future than to the past. It is significant
that Drucker wrote, in 1957, "the old view of the world, the old tasks and
the old center, calling themselves 'modern' and 'up to date' only a few years
ago, just make no sense any more."[1] It is significant also that the title he
used for the introduction to his book was "This Post-Modern World."

EDUCATION FOR NATIONAL SURVIVAL

Our colonial forefathers were greatly concerned about education for sal-
vation; during the national period, our leaders became concerned with estab-
lishing public school systems to promote intelligent citizenship; when we
entered the stage of rapid industrial expansion, the economic motive for edu-
cation received increasing recognition; and when, during the last decades of
the nineteenth century, reform became the dominant theme in American

[1] Peter F. Drucker, *Landmarks of Tomorrow* (New York: Harper & Row, Publishers,
1957), p. ix.

politics, the demand for reforms in educational programs occupied the center of the stage in education.

Since Soviet Russia launched the first artificial earth satellite in 1957, national survival has overshadowed every other motive for education. This does not mean, of course, that older motives for education are no longer influential. But the need to compete successfully in the great world struggle has become so evident that school subjects are given priority in terms of their contributions to the strength of the nation. Moreover, changes in content and teaching procedures within the subjects are generally supported on the basis of national needs.

The Trend toward Centralization

After more than three centuries of curriculum changes initiated primarily at the state and local school district levels, we are now witnessing increasing activity at the national level. Until recently, no one seriously questioned the idea that local control of the curriculum was desirable. Indeed, the American tradition has been that the public schools belong to the people in local communities; that they can remain truly American only so long as they are responsive to the wishes of the people in the community.

As our people have become increasingly concerned about the future of our country in a troubled world, they have recognized that the education of children and youth is a matter of national concern. Within a year after the launching of Sputnik, Hanna published a statement in which he raised the question of the ability of a curriculum conceived primarily by the state board of education and the local school district to provide adequate foundations for the nation's strength and welfare. He maintained that all American children should be exposed to a common set of values and understandings to be agreed upon by voluntary, nonpolitical agencies.[2] Three years after Sputnik, Lieberman expressed the opinion that mobility and interdependence had completely undermined the notion that local communities should have a free hand in educating their children.[3]

Curriculum Reform from the Top Down

The fascinating series of events through which new materials and new procedures have been entering the bloodstream of American classrooms in recent years cannot be described in detail here. Reference has already been made to the impact of national curriculum projects on the major curriculum areas.[4] Many of the students using this text have, no doubt, been exposed to

[2] Paul R. Hanna, "Design for a National Curriculum," *Nation's Schools*, September 1958.

[3] Myron Lieberman, *The Future of Public Education* (Chicago: University of Chicago Press, 1960).

[4] See also Association for Supervision and Curriculum Development, *Using Current Curriculum Developments* (Washington, D.C.: The Association, 1963).

the "new" mathematics, the "new" physics, or the "new" biology in high school and college courses.

The current curriculum reform movement is proceeding from the top down; attention is sharply focused on single subjects; curriculum projects at the national level are generously supported by funds from the federal government and from the foundations; and college and university faculty members representing the various disciplines are active participants in curriculum planning for elementary and secondary schools. Although science and mathematics have received major emphasis, new courses have also been developed by national projects in anthropology, English, geography, foreign language, and economics. Sponsors for projects in all these fields point to the importance of the field in relation to the world conflict. A recent article by United States Secretary of Commerce Luther H. Hodges (*Look*, January 28, 1964) illustrates this trend. Hodges maintains that the main bout will be slugged out in the economic arena; that we need to take steps to increase our economic understanding; and that the place to start is in our grade schools.

Curriculum projects, sponsored by agencies at the national level, are scattered throughout the country primarily on university campuses. They started out to revise the content in various elementary and secondary school fields, but they did not stop there. The new mathematics, for example, emphasizes the mathematical rather than the social aspects of the elementary school program; content is pushed down so that high school students go as far as two years into work formerly reserved for college programs and elementary school pupils begin the study of geometry. Most of the projects expect more from pupils than the mere acquisition of information; they are supposed to become sensitive to the structure of the discipline—to think like a physicist, a mathematician, or an economist. The search is for something more lasting than bits of information; the search is for a kind of education that will help pupils become self-propelling during a lifetime of learning.

How Successful Have These Projects Been?

Although efforts have been made to evaluate these "new" programs, the primary emphasis has been placed on getting massive curriculum reform under way quickly; evaluation can come later. There is little question that vastly improved content and procedures have been developed. The questions that are raised deal with how these new programs can be implemented in 85,000 elementary schools.

Goodlad stated in 1963 that tens of thousands of schools have been scarcely touched, or touched not at all, by the curriculum projects. The phenomenon of college professors suddenly urging that their particular discipline be given a separate period in the daily schedule of an elementary school also raises some problems of scheduling. As Goodlad has pointed out, "Demands will exceed time, even if the school day, week, and year should be lengthened.

Some subjects will have to be combined or left out—there is not room for twenty academic disciplines in the kindergarten." [5]

School administrators generally recognize that these projects offer exciting new content and procedures for public school programs, but that they are proving to be stern taskmasters in many respects. Many teachers took traditional college courses in mathematics and science rather than the new courses; the demands made upon school-system budgets for in-service education have been greatly increased; and capable consultants in mathematics and science are in short supply. There has been widespread concern that the pressure to *learn more earlier* may be placing undue pressures on children and youth that may have unfortunate consequences during the years ahead.

GLIMPSES OF THE FUTURE

Predictions about the shape of things to come are always hazardous. There is the danger of predicting the future as one would like to have it, the danger of overemphasis one factor and neglecting others, and the danger that any forecast that is based on available evidence may be upset by cataclysms or unexpected events that thrust themselves into human affairs. Nonetheless, there can be no intelligent planning of the elementary school program unless it is assumed that certain conditions are more likely to exist in the foreseeable future than certain other conditions. Moreover, a careful look at the next few decades need not represent mere crystal gazing; trends that are clearly observable today provide a sound basis for estimating what is likely to happen tomorrow. The alternative to an honest effort to predict the future is to accept a philosophy of pure opportunism.

Children now enrolled in elementary schools will, if they attain the normal life span, live many years in the twenty-first century. It is not possible to predict with any degree of accuracy the details of the kind of world in which these children will live. If we can assume that science and technology will continue to produce changes at a constantly accelerated rate, that mankind will find ways of using the enormous power available for constructive rather than destructive purposes, and that the quantity and quality of educational opportunities will be sufficient to release the potential of more and more children and adults, then the prospects that lie before those who will be living ten, twenty, and a hundred years from now are indeed fascinating.

Glimpses of the future, which have come to us in increasing volume, cover a wide range of innovations ranging from exciting new products for use in the home to dramatic shifts in the centers of power in national and international affairs. Some predict the emergence of a new social order in which

[5] John I. Goodlad, "Changing Curriculum in America's Schools," *Saturday Review*, November 16, 1963, p. 65.

a new power to organize for joint effort and performance will create new frontiers, new tasks, and new opportunities. Some point to the emergence of the educated society in which increasing numbers will receive the benefits of higher education and in which education will be the magic word in promoting international cooperation, the abolition of poverty, lessening of racial tensions, and helping underdeveloped countries to improve standards of living.

Most estimates of the future assume that the population of the United States will reach 221 million by 1975; that college enrollment will reach 7 million by that year; that elementary school enrollments will continue to increase by a million a year and secondary school enrollments will increase by half a million a year; and that expenditures for schools will need to be doubled in the next few decades. The gross national product is expected to double in the next twenty years; per-capita income is expected to be $5000 by A.D. 2000; and the work week is expected to decrease to eight hours by the middle of the next century.

Automation promises to take care of the entire operation of bank clearinghouses with only a few workers keeping the machines in working order; to produce electronic devices for translating one language into another; to provide libraries with a computer whose magnetic memory can swiftly tabulate and show on a screen information on any topic; and to enable the housewife to prepare a meal in a matter of minutes.

There is little doubt that the future will be brilliant with many new consumer products. The air-conditioned homes, offices, and automobiles, the telephones, and the color television sets of today will no doubt suffer from comparison with the new products of the future. A new electroluminescent glass wall panel will heat and cool a room instantly, and the color of a wall will vary in response to the movement of a dial to the color desired. It will be possible to have cold packaged anywhere in the house, eliminating the need for a refrigerator. Clothes will be cleaned by ultrasonic waves while they hang in the closet over night, and radio and television will be built into the wall to be tapped on and off like a wall switch.

Space exploration is expected to advance rapidly enough to place a man on the moon soon, and Earth satellites will probably be used to improve weather forecasting, to communicate messages quickly and accurately anywhere, and to detect the birth of storms and hurricanes. A mirror hung in space may be used to light entire cities, dispel killing frosts, and melt icebergs to free icebound ports.

The consequences of the atomic revolution, the computer revolution, and the aerospace revolution are perhaps better understood than are the consequences of the biological revolution which has been going on at a steadily accelerating rate, making it possible for man to increase his ability to manipulate his environment and to gain a better understanding of himself. At least one writer has pointed out that the biological revolution is not only more

crucial than any of the others, but that it is largely responsible for the others.[6]

Predictions relating to what is likely to happen in the next two decades as a consequence of the biological revolution include: (1) the virtual elimination of communicable diseases; (2) the transplanting of human organs; (3) greatly improved treatment of mental illness; (4) reduction in the number of domestic food animals; (5) greater use of plants to convert solar energy into human food; (6) extensive farming of the sea to add to the food supply; and (7) greater use of computers for teaching purposes as a means of keeping up with the knowledge explosion.

The glimpses of the future that are coming to us from many sources, though differing in detail, have several points of agreement: the rate of change in the future will be swifter and more dramatic than it has been in the past, and its impact far more penetrating; man's control of his natural environment will make possible a more humane existence than has ever been known before; he will have the power, if he chooses to use it, to sweep away in a very short time all the great works and achievements that we call civilization; and he must, therefore, create new designs for education in harmony with the demands of the future that is rushing upon him.

THE ELEMENTARY SCHOOL OF THE FUTURE

The forecast that follows is based on the assumption that conditions of living will place heavier responsibilities on the school, that research in education and in related disciplines will provide the know-how for more effective educational procedures and programs, and that the increased productivity of American industry will make feasible adequate financial support for a greatly expanded program of elementary education. Indeed, the 1965 Elementary and Secondary Education Act has already provided funds for a vastly improved program. Some of the conditions mentioned as likely to characterize elementary schools of the future already exist in some outstanding schools in this country; others require only a major breakthrough in cutting down the lag between the formulation and the diffusion of sound educational procedures.

Larger Schools: More Adequate Services

The attention that has been given to the problem of school-district reorganization for several decades is evidence of the conviction that small, inefficient districts limit the educational opportunities provided for pupils. There has been a steady decline in the number of school districts in the United States. There were 94,926 districts in 1947–1948, 54,859 in 1955–1956, and 31,319 in 1963–1964.[7] The number of public elementary schools in the United

[6] Paul R. Ehrlich, "The Biological Revolution," *Stanford Review*, September–October 1965, pp. 20–48.

[7] Roald F. Campbell, Luvern L. Cunningham, and Roderick F. McPhee, *The Organization and Control of American Schools* (Columbus, Ohio: Charles E. Merrill Books, Inc., 1965), p. 94.

States decreased from 169,905 in 1944 to 128,225 in 1950 to 85,000 in 1964. These changes resulted in part from the consolidation of rural schools and in part from the elimination of small, inefficient schools in urban school systems.

There is no generally accepted criterion relating to the optimum size of an individual elementary school, although one study suggested that the maximum should be 500 pupils.[8] Experience has shown, however, that if the school is too small, it is not feasible to provide, at a reasonable per-pupil cost, the educational services that are considered essential to the growth and development of children. These services include a kindergarten program, supervision of instruction, health services, guidance services, special programs for exceptional children, a central library and a certified librarian, a full-time principal, and secretarial services. These services are seldom found in schools with fewer than 200 pupils enrolled to as great an extent as they are found in larger schools. There is evidence also that the larger elementary schools have been more inclined to take advantage of innovations in organization and instruction such as the nongraded school, team teaching, the use of teacher aids, and instructional technology.[9]

Special Education for the Gifted Child

Interest in identifying children with unusual ability and providing them with special educational opportunities is not new. Plato suggested that ways be found to identify gifted children so that they could be educated for leadership in the state; Suleiman the Magnificent sent talent scouts throughout Asia Minor in the sixteenth century to select the most intelligent youth to be trained for positions of leadership in the Empire. In this country, as early as 1867, the public schools of Saint Louis, Missouri, were allowing gifted children to accelerate their pace rather than to remain in the "lock-step" program. Programs for gifted children, which emphasized enrichment rather than acceleration, had been developed in Cleveland, Los Angeles, and Rochester by 1920.

The increase in the number of books, articles in professional journals, and curriculum bulletins dealing with the education of gifted children has been noticeable in recent years. The number of curriculum bulletins on this subject produced by state and local school systems and exhibited at the annual conventions of the Association for Supervision and Curriculum Development has illustrated this trend—1960, ten bulletins; 1962, twenty-nine bulletins; and 1965, twenty-two bulletins.[10]

[8] Educational Policies Commission, *Education for All American Children* (Washington, D.C.: National Education Association, 1948), pp. 77–78.
[9] Project on the Instructional Program of the Public Schools, *The Principals Look at the Schools* (Washington, D.C.: National Education Association, 1962).
[10] Association for Supervision and Curriculum Development, *Curriculum Materials* (Washington, D.C.: The Association, 1960, 1962, and 1965).

The current emphasis on excellence in education, the urgent need for developing to the greatest extent possible the intellectual powers of talented youth, and the increased attention that is being given to programs for gifted children indicate that elementary schools of the future will continue to improve programs for this segment of the elementary school population.

More Thorough Mastery of the Fundamentals

The increasing complexity of problems confronting the citizen during the second half of the twentieth century, our new adventure in world affairs, and the explosion of knowledge in practically every field demand that Americans become better informed than ever before and this means that they must be able to read faster and comprehend more fully what they are reading. One leading authority on reading suggests that the "horse-and-buggy" rate of 300 words a minute may become a "rocket" rate of 1000 words a minute.[11]

Research and experimentation relating to more effective methods and materials for teaching reading and arithmetic have been in progress for many decades. As long ago as 1953, it was reported that 2700 studies of the teaching of reading and 1100 studies of the teaching of arithmetic were available.[12] Since that time, of course, much more extensive studies have been made in these fields. The new programs in elementary school mathematics have been presented in detail in Chapter 11 and the new developments in reading have been characterized in Chapter 9.

It can be expected that innovations in grouping and in regulating pupil progress, greater quantities and superior quality of books, the use of instructional technology, and better preparation of teachers will provide types of programs in reading and mathematics that will be much better suited to the needs of the child and the demands of the culture.

A Balanced Curriculum

The elementary school of the future will provide vastly improved programs in the fundamental subjects such as reading and mathematics, but it will not neglect the humanities, the arts, and the social studies. Population changes, the impact of automation, developments in transportation and communication, the increasing interdependence of peoples throughout the world, and the biological revolution place those phases of the curriculum that deal with human relationships in a position of major importance.

[11] Nila B. Smith, "Historical Turning Points in the Teaching of Reading," *National Education Asssociation Journal,* May 1952, p. 282.

[12] William Van Til, "Research Affecting Education," in Association for Supervision and Curriculum Development, *Forces Affecting American Education* (Washington, D.C.: The Association, 1953), p. 120.

For more than a hundred years the schools in this country have been concerned with the preservation and extension of democratic values and with the development of the highest type of democratic citizenship. During the nineteenth century, they played an important role in the "Americanization" program, through which millions of children of immigrants were integrated into the American way of life. Many foreign observers have singled out this program as one of the great achievements of public education in the United States. As our people come to realize more clearly what it means to live in a global society, the pressure will increase for a balanced curriculum in the schools, each area of which contributes to the development of insights into human relationships.

Better Qualified Teachers

The level of preparation of teachers has been improving for several decades. In 1932, only 12 percent of the elementary school teachers in the United States held the bachelor's degree or higher preparation. Now approximately 85 percent of all elementary and secondary teachers have the bachelor's degree or higher preparation, 25 percent have master's degrees, and 10 percent have completed a year or more of work beyond the master' degree.[13] In 1963, the bachelor's degree was required for the lowest regular certificate for elementary school teachers in all but four of the fifty states.[14] The number of teachers who do not have all the qualifications necessary to obtain regular teaching certificates has been decreasing in recent years. In 1947–1948, there were 101,612; in 1957–1958 there were 94,732; and in 1963–1964 there were 83,200.

The Commission on Teacher Education and Professional Standards of the National Education Association is currently calling for a program of teacher education that will require at least five years of college preparation. Recent research has documented the importance of providing well-qualified teachers for children. Cheal's study, for example, reports that the qualifications and salaries of elementary teachers correlate more highly with retention rates in Canadian high schools than do those of secondary school teachers.[15]

If current trends are projected into the future, the elementary school teacher in the next few decades will have at least five years of college preparation, will have a broad general education, will possess professional competencies comparable to those of persons in other strategic professions, will be able to gain tenure by service, and will draw compensation after retirement.

[13] Campbell, Cunningham, and McPhee, p. 262.

[14] Carol Joy Hobson and Samuel Schloss, *Fall 1963 Statistics on Enrollment, Teachers, and Schoolhousing* (Washington, D.C.: U.S. Government Printing Office, 1964), pp. 12–13.

[15] J. E. Cheal, *Investment in Canadian Youth* (Toronto: The Macmillan Co. of Canada, Ltd., 1963).

Services for Children under Six Years of Age

Research relating to changes in human characteristics from infancy to adulthood has established the validity of the proposition that the period of most rapid growth in school achievement and in certain personality traits occurs during the age span encompassed by nursery school, kindergarten, and the primary grades.[16] Worth has stated the critical-years hypothesis as follows: "the assertion that the kinds of experience that a child has in the early years are the major determiners of his subsequent school career." He says, "This hypothesis is not a new one. It has been voiced many times before in many different ways. What is new, however, is the increased amount of evidence in its support." [17]

Recommendations that kindergartens be established as a part of public school programs have been made by the Educational Policies Commission in 1948, by the Southern Association of Colleges and Secondary Schools in 1951, and by the White House Conference on Children and Youth in 1960. In spite of these recommendations and the increasing amount of research pointing to the importance of the early years in child development, only one fourth of the children in the three-to-five-year age group were attending public and private nursery schools and kindergartens in October 1964.[18] The "Head-start" program inaugurated in the summer of 1965 was a recognition of the importance of providing educational opportunities for preschool children, particularly for those from economically and culturally deprived homes. It has been estimated that 560,000 children completed courses during the summer of 1965 to help bring them up to the academic, physical, and social levels of their classmates who would be attending school with them the following school year.

In view of the increasing amount of research dealing with the importance of the early years of a child's life, the interest manifested in providing preschool educational opportunities for culturally deprived children, and the increase in financial support for these programs from the federal government, elementary schools of the next few decades can be expected to extend their programs to include at least kindergarten programs for five-year-olds.

Changing Concepts of the Teacher's Function

The current shortage of well-qualified teachers, which is but one aspect of the shortage of college-trained personnel for all purposes, is likely to in-

[16] Benjamin S. Bloom, *Stability and Change in Human Characteristics* (New York: John Wiley & Sons, Inc., 1964).

[17] W. H. Worth, "The Critical Years," *Canadian Administrator* (University of Alberta, Edmonton, Canada), January 1965.

[18] U.S. Office of Education, Bulletin OE–20079, June 1965.

crease rather than decrease in the years ahead. This fact, together with the increasing professionalization of teaching, points to the need for conserving and using effectively the teaching talent that is available. It will be necessary in the years ahead to give more attention to providing a favorable environment for teaching, and to eliminating conditions that discourage some teachers, prevent others from teaching as well as they know how, and drive others out of the teaching profession. Many school systems are already finding ways to relieve teachers of time-consuming, nonteaching chores, to provide more effective administration and supervision, to assist teachers in getting oriented to the school and community, and to make other provisions for raising the morale and increasing the efficiency of teachers.

At the same time that school systems are taking steps to release the time and energy of teachers for the important task of teaching, more specialized school personnel is being provided to assist teachers in locating and providing for children with special problems. School physicians, nurses, psychologists, psychiatrists, social workers, guidance workers, and librarians work closely with classroom teachers in an increasing number of school systems and help to release the time of the teacher for instruction of pupils.

As homes become better supplied with reading materials; as public libraries, museums, art galleries, and other resources of the community are made available for learning activities of children; as businesses and industries in the community make special provision for school children to visit them and get information; in short, as the resources for learning are broadened, the child's education ceases to come exclusively from the teacher and from the classroom. The teacher's role becomes less that of giving out information and more that of coordinating and guiding the learning that comes from many sources. This process requires a great deal more professional skill than merely hearing lessons and giving out information. The observer in many modern elementary school classrooms is impressed by the extent to which teachers are assuming this newer role and by the effect that it has on the behavior of children.

Classrooms with the Forward Look

There is evidence that the influence of science and technology, which has revolutionized farming, banking, manufacturing, communication, transportation, and the preparation of meals, is beginning to invade classrooms. In the past the teacher who understood the contributions that audio-visual materials could make to effective teaching or who wanted to provide pupils with opportunities to engage in multiple learning activities was too frequently thwarted by outmoded equipment and inadequate furniture. How many teachers have thought, as they struggled with darkening the room, setting up the projector and the screen, and operating the projector, "Is it worth the

effort?" How many have been discouraged from attempting to divide the class into groups, to use dramatic play, or to encourage experimentation, by rows of desks screwed down to the floor? How many capable young teachers have asked themselves the question, "If this enterprise is as important as I have been led to believe, why must I work with outmoded tools?"

School equipment manufacturers have come up with a teacher's desk that is as modern as the guided missile. This desk of tomorrow has a panel that contains buttons to close window draperies, turn off room lights, swing the television receiver into position from its hidden recess, and control motion-picture equipment and other teaching devices. These electronic units are expected to be in use in new classrooms all over the United States within a few years to contribute to the effectiveness of teaching.

After a careful study of the kinds of activities in which elementary school pupils engage, a work-center type of furniture for pupils has been designed. For a classroom of thirty-two pupils the following pieces of furniture are provided: two rectangular tables six feet in length; two round tables three-and-one-half feet in diameter; eight table-desks three feet square; four book compartments placed on each of the eight table-desks—enough for thirty-two pupils; thirty-two pupil chairs; stuffed (upholstered) furniture consisting of two pupil chairs and a settee large enough to accommodate two pupils; two movable bookcases four feet long, mounted on rubber casters; two easels; and a teacher's desk and chair. All pieces of furniture are designed so that they can be easily moved and arranged. On the back of each portable bookshelf is either a chalkboard or a tack-board surface. Experimentation with this type of furniture led to the conclusion that, "The instructional program in classrooms using the experimental furniture was more in harmony with tenets of modern educational theory than was the instructional program in classrooms using conventional furniture.[19]

These and other innovations indicate that the elementary school classroom of the future will contain furniture and equipment that will permit a more creative program of education than is possible today.

School Buildings for Tomorrow

Significant changes in elementary school programs have occurred recently, as preceding chapters in this text have indicated. Because the impact of research and experimentation is cumulative, many more innovations can be expected in the years ahead. Research in child development and experimentation with new methods and media will provide new insights, and administrators, teachers, and architects must make certain that school buildings keep pace with the changing educational program. Those who plan school build-

[19] David C. Sanders, *Innovations in Elementary School Seating* (Bureau of Laboratory Schools, Publication No. 10; Austin, Tex.: University of Texas, 1958), p. 145.

ings for tomorrow must accept the fact that instructional technology will make certain demands upon the types of rooms provided; that team teaching depends to some extent upon the availability of a variety of types of rooms; and that space must be provided for specialized personnel who will become increasingly important in elementary schools of tomorrow.

Otto and Sanders have pointed out, "The significant role of administration, and office spaces appropriate thereto, have never received proper consideration in designing elementary schools." [20] They would include in "facilities for administration" a health services and first-aid room, a teachers' lounge, a teachers' workroom, an adequate number of storage rooms, a conference room that will seat twenty to thirty persons and several smaller conference rooms, an office for the psychologist or counselor with smaller offices for administering tests and providing remedial instruction for individuals or small groups. Counseling services and individual instruction will undoubtedly increase in the future; as these services increase, contacts with parents will become increasingly important, and space requirements will be influenced by these needs.

Current trends indicate that elementary school buildings of the future will be one-story structures, with separate entrances to each classroom from the play area; that school sites will contain a minimum of ten acres; and that specialized facilities, in addition to those mentioned above, will include a library and materials center, a cafeteria, and a gymnasium. The classrooms in traditional elementary school buildings were generally constructed in the shape of a square or rectangle, with all classrooms about the same size and shape. As Otto and Sanders have pointed out, "New ideas about education and architecture have burst the box." [21] Another publication reports that at least twelve different shapes for elementary school classrooms have been tried in different parts of the country.[22] Many activities in modern elementary classrooms are carried on in arcs or circles of children, and the wide-angled corner is more suitable for these activities than the 90-degree corner.

Detailed Descriptions of the School of the Future

This chapter has been limited to an analysis of impending changes in a few important facets of the elementary school program. Other facets of the program such as impending changes in the reading program, increasing attention to intellectual competence, and effective use of instructional resources are treated in the references listed at the close of this chapter. Readers will be interested also in reading some of the detailed descriptions of mythical schools

[20] Henry J. Otto and David C. Sanders, *Elementary School Organization and Administration* (fourth ed.; New York: Appleton-Century-Crofts, 1964), p. 331.
[21] *Ibid.*
[22] The National Elementary Principal, *Elementary School Buildings: Design for Learning* (Washington, D.C.: National Education Association, 1959), p. 23.

of tomorrow, such as "Hope" school in the suburb of "Utopia" and the "Apartment" primary school in Core City.[23]

SUMMARY

1. The advent of Sputnik, in 1957, ushered in the postmodern period in which the old view of the world in which we live no longer made sense.

2. Since 1957, education for national survival has overshadowed every other motive for education; there has been a trend toward centralization in curriculum planning; and the content and methods of local school programs have been increasingly influenced by projects at the national level.

3. It is generally agreed that curriculum projects at the national level have developed vastly improved content and procedures in many subjects; it is recognized also that much cooperative planning remains to be done before these new programs can be utilized to the fullest extent in elementary schools throughout the nation.

4. The population explosion, the increase in the gross national product, the emergence of the educated society, the impact of automation, and the rapid advancement in space exploration are expected to bring about radical changes in the environment of those who will be living during the decades ahead.

5. Children will attend larger elementary schools with more adequate educational services; they will continue to achieve more thorough mastery of the fundamentals; living in a global society will require them to develop greater insights into the area of human relationships; they will be taught by better qualified teachers; and clerical help and the services of specialized school personnel wll enable teachers to concentrate on the professional aspects of their work. Special educational opportunities will be provided for culturally deprived children.

6. Those who plan school buildings for tomorrow will realize that the physical plant must keep pace with the changing educational program; that the impact of instructional technology makes certain demands upon the types of rooms provided; that innovations in instruction, such as team teaching, require a variety of types of rooms; and that space must be provided for specialized personnel.

7. Detailed descriptions of mythical elementary schools of tomorrow are available from a wide variety of sources.

[23] Lester B. Ball, "The Elementary School of 1980: A Suburban Superintendent Makes a Prediction," *Elementary School Journal*, October 1964, pp. 9–17; James B. Burr, and others, *Elementary School Administration* (Boston: Allyn and Bacon, Inc., 1963), Chapter 15.

SELECTED READINGS

Austin, Mary C., and Coleman Morrison, *The First R: The Harvard Report on Reading in Elementary Schools.* New York: The Macmillan Company, 1963. Chapter 9, "Will Tomorrow Be Another Day?" contains forty-five recommendations for the improvement of reading programs.

Brown, Harrison, James Bonner, and John Weir, *The Next Hundred Years.* New York: The Viking Press, Inc., 1957. This book represents an attempt to forecast the future of our industrial civilization.

Burr, James B., and others, *Elementary School Administration.* Boston: Allyn and Bacon, Inc., 1963. Chapter 15 contains a detailed description of mythical schools of the future.

Clift, Virgil A., and others, *Negro Education in America.* New York: Harper & Row, Publishers, 1962. Chapter 6 explains the problems involved in achieving adequate educational opportunities for Negroes.

Drucker, Peter F., *Landmarks of Tomorrow.* New York: Harper & Row, Publishers, 1957. Explains in detail evidence that points to spectacular future changes.

Lee, J. Murray, "Elementary Education: 1985," *Educational Leadership,* May 1960, pp. 475–479. This article identifies "best practices" in some of the schools today that may be widespread in the schools of tomorrow.

National Elementary Principal, *Elementary School Buildings: Design for Learning.* Washington, D.C.: National Education Association, 1959. This publication deals with the problem of translating children's needs into building design.

Otto, Henry J., and David C. Sanders, *Elementary School Organization and Administration.* Fourth ed.; New York: Appleton-Century-Crofts, 1964. Chapter 12 provides suggestions for administrative quarters, specialized facilities, and classrooms for tomorrow.

Prospect on the Instructional Program of the Public Schools, *Planning and Organizing for Teaching.* Washington, D.C.: National Education Association, 1963. Appendix A contains thirty-three forward-looking recommendations.

———, *Schools for the 60's.* Washington, D.C.: National Education Association, 1963. This publication contains a section, "In The Future," which points to some desirable directions for the instructional program.

———, *The Principals Look at the Schools.* Washington, D.C.: National Education Association, 1962. This bulletin reports what principals expect in the way of innovations in elementary school programs in the years ahead.

SELECTED FILMS

Secure the Blessings. A three-reel sound film explaining the role that schools play in our democratic society. (National Education Association)

Skippy and the Three R's. A three-reel sound film giving a detailed account of how children in modern schools learn the fundamentals and at the same time learn to understand the world about them. (National Education Association)

The Three R's Plus. A three-reel sound film presenting classroom scenes that point up graphically many important responsibilities of the modern elementary school, including the teaching of the three Rs. (McGraw-Hill, Inc.)

Photo Comment

EDUCATION ON A ONE-TO-ONE BASIS

We have previously discussed the need for individualized instruction for children with learning problems stemming from cultural disadvantage. There are, of course, other reasons why remedial work is necessary, but regardless of the reason, instruction on a one-to-one basis will maximize progress. Administrators may tinker with grouping, but the fourth-grade child who is reading a second-grade book isn't going to overcome the deficit by being placed with twenty-five like himself, in a group labeled "nongraded primary middle level." The goal of the school should be to advance the child by two years in reading in a year's time, not to inch him ahead by a few months only, and this goal can only be achieved by individual instruction. There is no hope in the foreseeable future of obtaining enough trained personnel to provide instruction on a one-to-one basis, but there are able and willing volunteers to be recruited from the ranks of college students and housewives. Over 1000 University of California, Berkeley, students are presently serving in such a program. With the growth of junior colleges, every sizeable community in the country will have access to a pool of eager and able workers.

A volunteer program of any size needs organization, and the head of the organization should be a full-time employee of the board of education, directly responsible to the superintendent. Teachers and volunteers need to draw up a policy statement that will define the role of the volunteer. And a major part of that role for most volunteers should be working on a one-to-one basis with pupils: listening to them read, having them write stories under supervision, supervising their homework, helping them prepare special reports. Not only can the tutor provide the needed cognitive assistance at the right time, but he can also affect achievement motivation.

It is to be regretted that some of the largest cities in America have a policy forbidding the use of volunteers. Whether it is a short-sighted teachers' union or other group, jealous of the rights of teachers, that has initiated the policy, the time for review is here. The children in our schools need all of the talent available, whether on a paid or volunteer basis.

Photo by Helen Nestor

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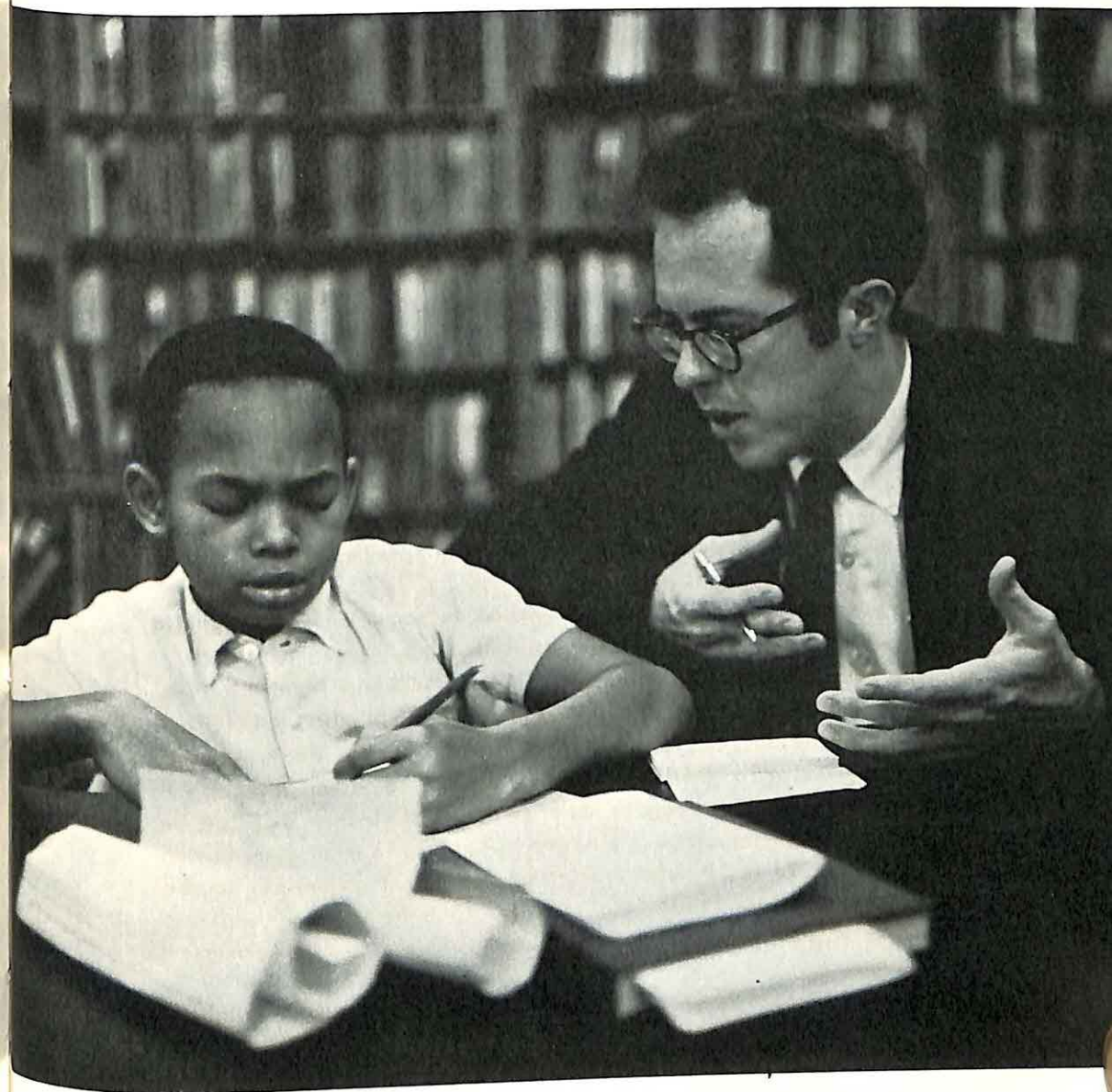
Photo Comment

THE LISTENING POST

Electronic devices provide another means of individualizing instruction. The "listening post" represents an ingenious use of such devices by University City Schools, University City, Missouri. Eight children sit around a table that is permanently equipped with tape recorder and individual earphones. Teachers with a flair for cutting tapes record a story or give directions to children for carrying on an unsupervised activity. The tape recorder can be hooked up with a machine for showing slides, so that if visual cues are needed, they are available, too.

The listening post helps to take care of the age-old problem of the primary teacher—how to keep one group of children profitably engaged while he concentrates on another. Tapes can easily be duplicated, and tape libraries built up of the most successful recordings. With careful planning, feedback can be built into the tape and slides, so that children will know immediately when they have made an error. Earphones shut out classroom noise and aid concentration.

The device is particularly well suited to some kinds of cognitive activities—learning colors and shapes, classifying, arranging objects in some kind of order, alphabetizing, trying out simple experiments, work with Cuisinaire rods. Activities often involve manipulative materials, a set of which is provided for each child at the post. Thus, visual, auditory, and proprioceptive cues can be used in the teaching process.

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Problems and Projects

1. Traditionally, the certification of teachers in the United States has been a function of state departments of education. More recently there have been moves in some states to change the procedure for certification, and to put it in the hands of state universities where academicians and educators would pass on the eligibility of candidates to teach in the public schools. Discuss the pros and cons of each method of certifying. For data to substantiate your arguments, read some recent articles on this topic listed in the Education Index.

2. Find out requirements for certification in your state and evaluate. Will a prospective teacher meeting these requirements be adequately prepared to teach in the modern elementary school? If not, what are the weaknesses?

3. In a powerful book, Crisis in Black and White (New York: Random House, Inc., 1964), Charles Silberman, the author, describes the problems of the Negro and the school. As Silberman points out, the problem of the Negro is not a "Negro problem," it is everyone's problem. Modern society demands something that has never been demanded before—masses of educated men. Teaching vocational skills is no substitute for literacy; to be illiterate today is to be unemployable. A person today who cannot read and write well enough to fill out his social security forms and to comprehend written directions is assigned to relief rolls.

Read Chapter IX in Crisis in Black and White. Your community may not have a large population of disadvantaged but it may have some other disadvantaged group—Puerto Rican, Mexican, Indian, mountain people, or other poor whites. Visit the schools attended by these children. Prepare an interview schedule and use it to interview one of the teachers on the special needs of her class. Pool your data in class. Do educational needs appear to become more acute as the children advance in school?

4. Is it fair to spend huge amounts of the taxpayer's dollar on education of disadvantaged children? Defend your answer.

5. For the past few years, a number of prominent voices have been heard in favor of national examinations for the schools. These educators advocate special achievement tests for both elementary and secondary schools to be administered annually. National examinations (the ten-plus exam, given to English children as they complete the primary school) are on their way out in England. However, in England the tests were used to decide which children would be eligible for grammar schools (prestige schools) where they might prepare for university and which would have to go to the national schools to prepare for a trade. Proponents of national exams in this country would use them only to evaluate school programs, and not to decide eligibility for higher

educational classes. Scores would neither be reported for individual schools nor for individual children.

Discuss the pros and cons of national examinations. What might be the impact upon the curriculum? Upon teaching procedures? To what useful ends might the results be put? What are possible dangers?

An interested student might prepare for class presentation a special report on the history of the New York Regents Examinations. Education Index and Readers' Guide will list articles on the subject.

6. Schools of the future are going to be looking toward ways of individualizing instruction within the framework of present class size. While a class of eight or ten pupils could easily receive individual instruction, we are not likely to see class size reduced to that extent in the foreseeable future. One way of providing one-to-one or small group instruction is to use subprofessionals in the schools. These are often housewives interested in part-time work, who may or may not have a college education. In some communities, however, school boards forbid the hiring of subprofessionals to work with children, an edict sometimes requested by teacher groups jealous of their prerogatives.

Should subprofessionals serve as assistant teachers? How might they be used? What qualifications should they have? Is a college education essential?

APPENDIXES

APPENDIX A

Recommendations in Education
for All American Children *

ORGANIZATION OF SCHOOLS AND CLASSES

1. Every child should be in a group where he is accepted by others and can enjoy the normal social relationships which build confidence and wholesome personalities.

2. Educational services of the public schools should include kindergarten and nursery school ages.

3. Children should spend, as a rule, two or three years with the same teacher.

4. In one-teacher schools, children of different ages and grade levels should be grouped together so that there will be fewer and larger groups than would be the case if each age or grade group were handled separately.

5. School services should be available during the entire year and during evenings as well as during the day—the staff for such expanded services being secured by adding personnel and increasing salaries.

6. Each teacher should have freedom to plan his own daily program, except for lunches and other periods which must be planned for an entire school.

7. Exceptional children should be members of normal class groups, except for periods when special help is necessary or for extreme cases requiring placement in special institutions.

8. Children with poor health should be given an adjusted school program in accordance with instructions from their attending physicians.

9. There should be a maximum of 500 pupils in any one elementary school.

10. Average class size should be greatly reduced to an average of twenty pupils.

11. Seasonal fluctuations in enrollment should be absorbed wherever possible in the regular schools by dividing classes and increasing staffs.

ADMINISTRATION

12. Small school districts should be combined into larger districts, each under a single administrative head, but administrative functions should be decentralized

* For additional recommendations see Educational Policies Commission, *Education for All American Children* (Washington, D.C.: National Education Association, 1948). The summary quoted here is not an official document of the Commission. It was prepared by the Department of Elementary School Principals of the National Education Association.

except in matters wherein efficiency clearly requires centralization, thus permitting individual schools to adapt their programs to the distinctive needs of their respective groups of pupils and neighborhoods.

13. There should be a full-time principal in every elementary school.

14. Members of the administrative and teaching staffs should interpret the work of the schools to the citizens of the community and plan for school improvement.

15. Close working relationships should be established between the schools and community social agencies.

16. School health clinics and visiting nurses should provide services for parents, prospective parents, babies, and preschool children, as well as for children enrolled in school. Such clinics should be equipped and staffed to provide psychological and guidance services as well as medical and dental services. Teachers should be permitted and encouraged to utilize such clinical facilities for obtaining assistance in dealing with particularly perplexing problems which any child may have.

17. School facilities should be available in the evening for children or adults to use in any constructive community or educational program.

18. A "home visitor" should be a member of the school staff, with responsibility for maintaining effective contact between the school and the homes of its pupils; in addition, each teacher should also hold conferences with the parents of all his pupils.

19. Policies and practices with respect to pupil grouping, promotion, and cumulative records should be consistent throughout both elementary and secondary schools within the same school system.

20. Public education should receive a substantial proportion of the national income, and total expenditures for public elementary education should be doubled.

21. Federal, as well as local and state, revenues should be available to assure opportunity for the adequate education of all children.

22. School revenues should be derived from a variety of tax sources.

23. A uniform rate of property assessment for purposes of school taxation should be applied throughout a state.

PUPIL PERSONNEL

24. Measurements of the following facts should be taken on each child whenever and as often as required: height, weight, mental age, aptitudes, reading readiness, and emotional development. An individual test of mental ability should be given each child on entering the school system and at such other times as seems desirable. Group tests of mental ability should be given to all elementary school pupils at approximately two-year intervals.

25. Objective measurements should be supplemented by anecdotal records and information about activities in school, home, and neighborhood.

26. Periodic health examinations should be made of all children, with parents present to plan follow-ups if necessary.

27. An individual health record should be kept for each child.

28. Records of children who are the primary responsibility of a particular teacher should be kept at hand by the teacher.

29. Achievements should be evaluated in terms of ability.

30. Nurses, physicians, and teachers should confer when necessary to adjust the school program to meet the health needs of individual children.

31. School physicians and psychologists should be available to counsel parents on problems of child growth and development.

TEACHING STAFF

32. Teachers should be employed and adequately paid for year-round service, with one month's vacation. During their eleven months "on the job," teachers should have time free from responsibility for direct work with children in order to engage in professional study, for preparation for school activities, and for participation in community programs.

33. Teachers' salaries should be determined by preparation and experience rather than by the age of children being taught.

34. The teaching schedule should allow ample time for each teacher to plan and evaluate.

35. Secretarial help should be provided to free teachers for professional service.

36. Boards of education should operate workshops, seminars, and conferences to aid the in-service education of teachers.

37. Continuing education concerning the growth and development of young children should be offered all elementary school teachers while in service.

38. Arrangements should be made for teachers to visit schools in other school systems for special purposes and to visit other schools in their own school system on a regular schedule.

39. Arrangements should be made for teachers to exchange positions (for short periods of time up to a year) with teachers in other schools in the United States and abroad.

40. The teacher of a one-teacher school should receive occasional assistance on special problems from other staff members of the larger district of which the school is a part.

41. Teachers should participate with the administration in selecting new personnel for the teaching staff.

42. Every teacher should belong to his local, state, and national professional associations and to other specialized organizations.

43. The school system should help teachers, particularly new teachers in the community, to locate living quarters; in larger cities, the board of education should build apartment buildings especially for teachers.

44. Teachers should be held responsible *to children* for every aspect of their total growth; *to parents* for consultation and advice concerning the education of their children; *to the community* for the provision of information on education;

and to the school system for active participation in the development of educational policies and for loyal execution of policies to which the system, through democratic procedures and legally constituted authority, has given approval.

CURRICULUM AND TEACHING

45. All teachers should participate in curriculum planning.

46. Each teacher should be free to utilize cooperative teacher-pupil planning in selecting and adapting the activities suggested in courses of study.

47. Teachers should study the community in order to become acquainted with distinctive educational resources that might be used by the school.

48. Children's experiences in the community should be used as a starting point for broader learnings. Such experiences should include attendance at adult meetings and visits to local institutions and industries, with parents sometimes accompanying their children on such excursions.

49. Resourceful people in the community should be invited to bring their special knowledge and interest to the school.

50. The same achievement should not be expected of all children.

51. The appraisal of results should be in terms of the behavior of children, as well as in terms of what they know and what they can do.

52. Efforts should be made to develop the talents of each child.

53. Children should be helped to explore their special interests.

54. Programs of citizenship education should endeavor to develop sturdy, independent initiative while at the same time emphasizing social responsibility and cooperative skills.

55. Skill in reading, writing, and arithmetic should be a major objective.

56. Systematic learning in science, home life, industrial arts, music, and health should be provided.

57. The elementary school program should provide for basic health education.

58. Habits of good workmanship should be emphasized.

59. Critical thinking and constructive discussion should be encouraged.

60. The educational program should include a varied program of recreation, dramatics, music, reading, hobbies, and sports, many of which activities should be carried on in cooperation with youth organizations.

61. Auditorium and assembly activities should grow out of classroom experiences.

62. Camping experiences should be provided for all children at camps operated by the schools throughout the year.

63. Small business enterprises should be established and operated by the school as a means of training children in economic skills.

64. The school should provide a service through which the employment of young people, either for pay or for community service without pay, is given the greatest possible educational value and proper safeguards.

65. For the severely mentally handicapped, there should be programs that should include handwork, personal grooming, buying, and the basic economic skills.

66. Children who are not well adjusted socially should be given special help to take part in the life and program of the school.

67. Children in the last year of elementary school should have several planned contacts with the secondary school and members of its staff.

68. Parents should be kept thoroughly informed of the progress of children by means of planned individual conferences with teachers and by annual reports giving full information about growth in physique, skill, knowledge, habits, social maturity, and emotional stability.

BUILDINGS AND EQUIPMENT

69. School buildings should be planned with the help of teachers, pupils, and other citizens.

70. School buildings should meet basic standards of health and sanitation.

71. The school building should have special rooms for administration, books and supplies, school library, lunchroom, auditorium, playroom, a room for community use, and a health suite including a room with cots where children may rest.

72. School sites should be not less than ten acres.

73. Playgrounds should be, wherever possible, adjacent to school sites.

74. School sites should include facilities for growing and caring for plants and animals, and city schools should own land outside the city on which children can have supervised experiences in simple farming operations.

75. All rooms in elementary schools should be on the ground level, with direct access to the school grounds from each classroom.

76. Well-designed, built-in storage space should be provided in each classroom.

77. Every child should have his own chair which can be moved where he wants it.

78. Each classroom should have a phonograph and radio.

79. School libraries should contain good collections of books, pictures, records, bulletins, and exhibits; should also be used for learning activities, such as free reading; and should be open throughout the year to adults as well as children.

80. Adequate instructional materials should be made available to all teachers by (a) spending more money for purchasing them, (b) following consistent long-range plans for purchase of supplies over a period of years, and (c) maintaining centers cooperatively with other schools or school districts for distribution of the more expensive and less frequently used learning aids.

81. Arrangements should be made for loan of materials among the schools and museums, libraries, and musical organizations.

82. School buses should be available for pupil excursions into the community.

APPENDIX B

An Illustrative Check List

No ready-made evaluation instrument should be used in a particular school until the local staff has had an opportunity to study it and make revisions, additions, and adaptations to suit local conditions. However, the check list that follows provides valuable help for a staff that is developing an instrument for locating the strengths and weaknesses of its program and facilities.

RATING SCALE

The following definitions of scale points emphasize the presence or absence of the condition, facility, or practice and the degree of adequacy.

M—means that the condition, facility, or practice is missing;

1—means that the condition, facility, or practice exists to a limited extent; it exists in some classrooms but is not typical of the whole school; or it is of doubtful quality;

2—means that the condition, facility, or practice exists to a considerable extent; it is rather typical of the school as a whole; or it is of fair quality;

3—means that the condition, facility, or practice exists to a great extent; it is practically universal throughout the school; or it is of excellent quality.

SECTION A. GENERAL OPERATIONAL PRACTICES AND FACILITIES

The Objectives of the School	M	1	2	3
1. The objectives of the school are stated in writing.				
2. The objectives are formulated cooperatively by pupils, teachers, administrators, and parents.				
3. The objectives are subject to continuous study and revision.				
4. There is continuous effort to develop understanding of objectives by teachers, pupils, and parents.				
5. The objectives emphasize physical, social, and emotional growth, as well as mental growth.				
6. The objectives are stated in terms of desirable changes in behavior.				
7. The objectives recognize individual differences in interests, abilities, and needs of pupils.				
8. The objectives emphasize democratic living and values.				
9. The objectives recognize the need for developing command of the fundamental processes.				
10. The objectives recognize the importance of developing the creative abilities of children.				
11. The objectives recognize the need for developing skill in human relations.				
12. The objectives recognize the importance of education for democratic citizenship.				
13. The objectives are limited to those that the school has a reasonable chance to achieve.				
14. The objectives recognize the need for helping pupils become increasingly self-directing.				

In what respects are the objectives of the school most commendable?

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In what respects are the objectives of the school in greatest need of improvement?

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Administration and Supervision	M	1	2	3
15. The school has a full-time, nonteaching principal.				
16. The school provides secretarial services for the professional staff.				
The principal:				
17. Encourages teachers to participate in the formulation of school policies.				
18. Assists teachers in obtaining needed instructional materials.				
19. Helps new teachers become oriented to the school and community.				
20. Encourages and facilitates in-service growth of teachers.				
21. Takes an interest in the personal problems and welfare of teachers.				
22. Actively promotes school and community cooperation.				
23. Devotes a major portion of his time to the supervision of instruction.				
The supervisor:				
24. Provides help in improving teaching-learning situations.				
25. Arranges for consultants to help with instructional problems.				
26. Conducts workshops or conferences on instructional problems.				
27. Helps teachers and principals obtain needed instructional materials.				
28. Encourages experimentation with new methods and materials.				
29. Works with individual teachers needing or asking for help.				
30. Takes the lead in working for good salaries and working conditions for the staff.				

In what respects are administration and supervision most commendable?

In what respect are administration and supervision in greatest need of improvement?

Curriculum Organization and Cooperative Planning	M	1	2	3
31. The school staff engages in continuous study, planning, and evaluation of the curriculum.				
32. Study of the conditions, needs, and resources of the community is a regular part of the curriculum.				
33. The study of developmental needs of children is emphasized in curriculum-planning.				
34. Parents participate systematically in curriculum study, planning, and evaluation.				
35. Pupils participate systematically in curriculum study, planning, and evaluation.				
36. Curriculum organization provides for continuity and sequence in learning the fundamental subjects.				
37. Class schedules are flexible enough to take advantage of unexpected events.				
38. Large blocks of time within the school day are provided for unit teaching.				
39. Curriculum organization provides for both direct teaching of subjects and unified activities.				
40. Teachers meetings are held in rooms that permit informal, face-to-face communication.				
41. School time is provided for committees working on curriculum-improvement projects.				
42. The plan of faculty organization originates with the faculty.				
43. Teachers have an opportunity to work on phases of the program in which they are most interested.				
44. Teacher-pupil planning in classrooms is encouraged.				
45. Committee assignments are well distributed among members of the faculty.				

In what respects are curriculum organization and cooperative-planning most commendable?

In what respects are curriculum organization and cooperative-planning in greatest need of improvement?

Evaluating and Reporting Pupil Progress	M	1	2	3
46. The evaluation program is comprehensive. (Information is obtained on mental ability, achievement, personal—social adjustment, physical status, interests, attitudes, work-study skills, creative expression, and home-community backgrounds of pupils.)				
47. Pupil progress is evaluated continuously instead of merely at stated intervals.				
48. Pupils participate, under the guidance of the teacher, in the evaluation of their own progress.				
49. Information about pupils is obtained regularly from parents, community agencies, and public officials.				
50. A comprehensive system of cumulative records is maintained.				
51. Teachers use a variety of evaluation instruments and procedures such as systematic observation, interviews, tests, anecdotal records, sociograms, and case studies.				
52. Teachers use the information they have about children to adapt instruction to individual differences.				
53. The system of reporting to parents is developed cooperatively by pupils, parents, teachers, and administrators.				
54. Reports to parents utilize parent—teacher conferences, personal letters, telephone calls, and home visits.				
55. Services of a psychologist and or psychiatrist are available for referral by parents and teachers.				
56. Reports to parents are made whenever there is a need for them rather than merely at stated intervals.				
57. Reports to parents are accurate, diagnostic, and constructive.				
58. Parents and teachers understand the objectives of each curriculum area on which pupil progress is evaluated.				

In what respects are evaluation and reporting to parents most commendable?

What aspects of the program are in greatest need of improvement?

The Quality of Living and Learning in Classrooms	M	1	2	3
59. The human relations in the classrooms are comfortable, free from excessive tensions, and conducive to learning.				
60. Children are free to make mistakes, ask questions, tell about their own experiences, and reveal their honest feelings.				
61. Teachers help pupils establish worthwhile goals toward which to work.				
62. Children are encouraged to make choices, exercise initiative, and assume responsibilities.				
63. Pupils enter into all their learning experiences with a high degree of enthusiasm, interest, and purpose.				
64. Pupils are encouraged to work up to the limit of their capacities.				
65. The physical arrangement of the room provides centers for various interests or activities such as a library corner, a science center, and an art center.				
66. Children are encouraged to do some things together just for relaxation or enjoyment—using poetry, music, story-telling, rhythms, and conversation.				
67. The physical environment of classrooms is healthful, comfortable, and conducive to learning.				
68. Classroom activities are varied so that all pupils may participate with interest and some degree of success.				
69. People, places, and things in the community are utilized in the instructional program.				
70. Pupils learn the fundamental skills through use in meaningful situations.				
71. A great variety of learning materials, media, and resources is provided—books, maps, globes, films, etc.				
72. Multiple types of grouping are utilized to meet the interests, needs, and abilities of children.				
73. Learning resources are selected and used for clearly understood purposes.				
74. Units of work are selected wisely and used effectively.				

In what respects are living and learning in the classrooms most commendable?

In what respects are living and learning in the classrooms in greatest need of improvement?

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The School Plant	M	?	2	3
75. The school site is large enough to provide space for driveways, parking space, garden plots, and differentiated play areas for older and younger children (five acres plus one acre for each 100 pupils).				
76. The school site is maintained in good condition and appearance.				
77. The school building is planned to house a modern program of elementary education.				
78. Classrooms are large enough to permit multiple learning activities and adequate storage space (approximately 1000 square feet for 25–30 pupils).				
79. Classrooms have adequate heating, lighting, and ventilation for the health and comfort of pupils.				
80. Teachers, pupils, and custodians cooperate to make classrooms attractive and usable.				
81. Toilet and lavatory facilities provided for pupils and teachers are adequate in number and location.				
82. One sanitary drinking fountain is provided for each 50 pupils.				
83. Toilet, lavatory, and drinking fountain equipment is kept in good repair.				
84. Adequate space and equipment are available for art, music, and physical education.				
85. The administration area includes a principal's office, a reception room, and a conference room.				
86. The school has an auditorium or assembly room large enough to accommodate the larger groups that attend school functions.				
87. The school has a central library of sufficient size to serve as a materials center.				
88. The school has a cafeteria or all-purpose room that can be used for many school activities.				
89. The school has a teachers' lounge equipped with comfortable furniture and toilet facilities.				
90. The school has an adequate supply of audio-visual equipment, and provision is made for darkening classrooms.				

In what respects is the physical plant most commendable?

In what respects is the physical plant in greatest need of improvement?

Arithmetic	M	1	2	3
91. Instruction is adapted to abilities, achievements, and needs of individual pupils.				
92. Textbooks are used as guides rather than followed verbatim.				
93. Teacher-made tests and standardized tests are used systematically for guidance purposes.				
94. Use in meaningful situations rather than abstract drill is emphasized.				
95. Drills are short, meaningful, and related to specific number needs of pupils.				
96. Many sensory and manipulative materials are used to make concepts meaningful.				
97. Pupils are helped to use self-evaluation devices in checking their own progress.				
98. Attention is given to the development of good work habits.				
99. Systematic procedures are used to develop an understanding of the number system.				
100. Pupils receive systematic instruction in problem-solving.				
101. Arithmetic instruction is closely related to out-of-school living.				
102. Systematic efforts are made to help children understand the language of mathematics.				
103. The school maintains a continuous program of in-service education of teachers to keep them informed about research on the teaching of arithmetic.				
104. Systematic attention is given to providing continuity in the child's learning experiences within each grade and from one grade to another.				

In what respects is the arithmetic program most commendable?

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In what respects is the arithmetic program in greatest need of improvement?

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Arts and Crafts	M	1	2	3
105. Pupils have opportunities to work with a variety of art media.				
106. Art is correlated with other curriculum areas such as language arts and social studies.				
107. Art instruction is adapted to individual differences in aptitude and interest.				
108. An adequate supply of art materials is provided.				
109. Opportunities are provided for a variety of simple manual activities—sawing, pasting, constructing, etc.				
110. Special events and holidays are used to motivate art work.				
111. Art resources of the community such as museums, exhibits, and local talent are utilized in the school program.				
112. In-service education programs are provided to help teachers increase their competence in art teaching.				
113. Arts and crafts are provided for all pupils rather than merely for the talented few.				
114. Provision is made for suitable display of children's art work.				
115. Displays are artistically arranged and changed frequently.				
116. Children learn to recognize some of the works of the old masters.				
117. Children are encouraged to express their own feelings and ideas through art.				
118. The school staff engages in continuous study and revision of the art program.				

In what respects is the arts-and-crafts program most commendable?

In what respects is the arts-and-crafts program in greatest need of improvement?

Health, Physical Education, and Safety	M	1	2	3
119. A definite time is set aside in the schedule for teaching health, physical education, and safety.				
120. An adequate supply of books and other instructional materials is provided for health, physical education, and safety.				
121. Events in school living such as the lunch period, physical examinations, and immunizations are utilized for teaching health.				
122. The curriculum in health is well-balanced in terms of major areas such as nutrition, rest, safety, communicable diseases, clothing, personal hygiene, posture, and mental health.				
123. A safety council or committee coordinates the safety program.				
124. Perfect attendance certificates and other artificial awards that encourage children to attend school when they are ill are avoided.				
125. Lists of school health policies are available to pupils, teachers, and parents.				
126. Teachers observe pupils systematically for symptoms of abnormality.				
127. Physical examinations are scheduled regularly for all pupils.				
128. One or more persons on the school staff are competent to administer first aid.				
129. The physical-education program is well-balanced in terms of rhythmic activities, individual skills, games of low organization, and games of relatively high organization.				
130. Physical education is provided for all pupils rather than merely competitive athletics for a few.				
131. Fire drills and other exit drills are held regularly.				
132. The building is inspected regularly for fire and safety hazards.				
133. The school staff cooperates actively with community agencies, parents, and physicians on problems of health, recreation, and safety.				

In what respects is the program in health, physical education, and safety most commendable?

In what respects is the program in health, physical education, and safety in greatest need of improvement?

The Language Arts	M	1	2	3
134. An adequate supply of materials is available for the language arts.				
135. A sound reading readiness program precedes the introduction of book reading.				
136. Many firsthand experiences are provided for concept-building.				
137. Teachers provide for individual differences through the use of grouping and the use of differentiated materials.				
138. Word-recognition techniques, including phonics, are stressed at all levels.				
139. Vocabulary development and comprehension are stressed at all levels.				
140. Remedial instruction is provided for pupils with particular reading difficulties.				
141. Teacher-made tests and standardized tests are used to evaluate pupil progress in reading.				
142. Children are guided in the selection and evaluation of books to read.				
143. Written and oral language activities provide many opportunities for creative self-expression.				
144. Pupils are given systematic instruction in listening.				
145. All spelling words are introduced in sentences.				
146. Visual, auditory, and kinesthetic methods are used in teaching spelling.				
147. Children are taught to proofread written work in all subjects.				
148. Attention is given to legible, neat writing in all subjects.				
149. Many language-arts activities develop out of other curriculum areas such as health and social studies.				
150. The language-arts program is subject to continuous study and revision by the school staff.				

In what respects is the language-arts program most commendable?

In what respects is the language-arts program in greatest need of improvement?

Music	M	1	2	3
151. The music-education program is well balanced in terms of various vocal and instrumental activities.				
152. The program emphasizes the enjoyment of music, the development of skills, and the understanding of music.				
153. Special talents in music are discovered and encouraged.				
154. Systematic efforts are made to help children develop an appreciation of our American musical heritage.				
155. Provision is made for developing an awareness of music as an expression of the culture of all people.				
156. Children have an opportunity to create simple melodies, rhythms, and dramatizations.				
157. Adequate teaching aids and materials are available for varied musical activities.				
158. Music is correlated with other school subjects such as social studies, language arts, and science.				
159. A specialist in music is employed as a consultant or coordinator to assist classroom teachers.				
160. Music education is provided for all pupils rather than merely for the talented few.				
161. Music instruction is related to individual differences in pupils.				
162. In-service education is provided for teachers to help them teach music more effectively.				
163. Parents and other interested citizens are kept informed about the objectives and accomplishments of the school music program.				
164. Evaluation of pupil progress is in terms of aptitudes of pupils rather than in terms of adult standards.				
165. Pupils are encouraged to apply their knowledge and skills in out-of-school music activities.				

In what respects is the music program most commendable?

In what respects is the music program in greatest need of improvement?

Science	M	1	2	3
166. The content of the science program is well balanced in terms of the principal areas such as living things, earth and universe, matter and energy, and how man controls his environment.				
167. Opportunities are provided for children to ask questions, relate experiences, and try things out.				
168. A variety of learning activities is provided such as field trips, demonstrations, experiments, use of resource persons, and reading.				
169. Classrooms contain many interesting books, magazines, pamphlets, pictures, and other materials dealing with various aspects of science.				
170. Seasonal changes, weather reports, temperature records and other uses of science in every-day life are used to motivate the study of science.				
171. Adequate equipment is available for simple science experiments.				
172. Children bring science materials of various kinds to class for study and experimentation.				
173. Children learn about growing plants and animals by helping to care for them at school.				
174. Periodic checks are made on the ability of pupils to observe accurately, locate information, and distinguish between fact and fancy.				
175. Children participate in the selection and planning of science activities.				
176. In-service education programs are provided to help teachers keep abreast of new developments in science teaching.				
177. Systematic efforts are made to teach critical thinking and the use of the scientific method.				
178. Pupils participate in the evaluation of their own progress in science.				
179. The program emphasizes the contributions of science to daily living.				
180. Pupils are encouraged to make collections of science realia.				

In what respects is the science program most commendable?

In what respects is the science program in greatest need of improvement?

Social Studies	M	1	2	3
181. The social-studies program is well balanced in terms of significant aspects of living.				
182. The program is flexible enough to take advantage of current happenings in community, state, and nation.				
183. Emphasis is placed on the social, ultural, and educational aspects of problems as well as on political and military phases.				
184. The sequence of learning experiences provides for continuous growth by building on previous experience and extending and enriching experience.				
185. The program is closely geared to developmental growth levels of pupils.				
186. Teaching procedures utilize units of work and other forms of group work in which pupils assume responsibilities and plan and evaluate activities.				
187. Reading materials are provided on a wide variety of topics and covering a wide range of reading abilities.				
188. Attention is given to developing such skills as note-taking, outlining, summarizing, and reporting.				
189. Learning experiences are sufficiently varied so that every child can participate with satisfaction and some degree of success.				
190. Provision is made for correlating the social studies with other curriculum areas such as language arts, science, art, and music.				
191. Pupil progress is evaluated in terms of changes in behavior as well as in terms of knowledge and skills.				
192. Children use democratic procedures in choosing leaders, planning and executing activities, and evaluating outcomes.				
193. Children study group life in the community, such as the local government, civic organizations, business and industry, and recreation and amusement.				
194. Children assume responsibilities for the care of the classroom, building, and grounds.				

In what respects is the social-studies program most commendable?

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In what respects is the social-studies program in greatest need of improvement?

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